

# London Borough of Sutton LAQM Progress Report 2014

Bureau Veritas October 2014



Move Forward with Confidence

This page has been left blank intentionally

## DOCUMENT CONTROL SHEET

#### Disclaimer

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

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

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

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

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

Issue/Revision	Issue 1	Issue 2	Final
Remarks	Draft for Comment	Draft 2	Final report
Date	June 2014	August 2014	October 2014
Submitted to	Dave Trew	Dave Trew	Dave Trew
Prepared by	Anna Czerska (Assistant Consultant)	Anna Czerska (Assistant Consultant)	Anna Czerska (Assistant Consultant)
Signature	A . C.	A.C.	A.C.
Approved by	Mark Chapman (Technical Director – Project Manager)	Dr Antony Wiatr (Principal Consultant – Project Manager)	Dr Antony Wiatr (Principal Consultant – Project Manager)
Signature	Whapun	Alliots	Allians
Project number		8466053	
File reference		2928	

## **Executive Summary**

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

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

Updated monitoring showed that concentrations at kerbside continuous monitoring sites ST4 (Wallington) and ST6 (Worcester Park) still exceed the objectives for NO<sub>2</sub>. Peak concentrations at these sites were observed in 2009-2010; the sites show a decreasing trend since.

A review of diffusion tube monitoring data for 2013 has identified three locations (ST40, H1 and H3) where the annual mean  $NO_2$  objective was exceeded. Site ST40 (High St, Cheam) showed consistent exceedence of the annual mean objective in previous years. Sites H1 (Hackbridge Rd) and H3 (London Rd, Hackbridge) were new sites added in 2013. As only three months of monitoring data were available in 2013, it is recommended that monitoring continues at those locations to confirm existing concentrations. A comparison with previous results shows that diffusion tube monitoring sites generally showed a decreasing trend since 2010. Concentrations in 2013 were lower than those observed in 2012, this trend should however be treated with caution due to low data capture in 2013.

With regards to  $PM_{10}$ , the 2009-2013 results show that the annual mean and the 24-hour mean objectives were met at all monitoring sites during that period.

Several major planning applications have been identified as having the potential to impact air quality and the development control process has been used to ensure that the impacts are mitigated. A number of the applications are in the Beddington Lane area where 2 automatic monitors are operational. It is recommended that monitoring continues at these locations to help verify the predicted impacts from the new developments. Regarding planning application ref. B2013/68306 for a mixed-use development including CHP plant at Old Gas Works, High Street, Sutton, it is

recommended that monitoring continues at relevant locations within Sutton to confirm the impact of that development on local air quality as existing annual mean NO<sub>2</sub> concentrations around Sutton have been shown to be close to or exceeding the objective in recent years.

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

- Continue diffusion tube and continous monitoring in the district to identify future changes in pollutant concentrations;
- Continue monitoring in Sutton to identify the impact of new development;
- Monitor impacts of new developments on PM<sub>10</sub> and consider revocation of Sutton AQMA for PM<sub>10</sub> if objectives continue to be met; and
- Proceed to the 2015 Updating and Screening Assessment.

Та	able of	ContentsTable of Contents	6
1	Intro	oduction	9
	1.1	Description of Local Authority Area	9
	1.2	Purpose of Progress Report	9
	1.3	Air Quality Objectives	10
	1.4	Summary of Previous Review and Assessments	12
2	New	v Monitoring Data	14
	2.1	Summary of Monitoring Undertaken	14
	2.1.1	Automatic Monitoring Sites	14
	2.1.2	Non-Automatic Monitoring	17
	2.2	Comparison of Monitoring Results with Air Quality Objectives	28
	2.2.1	Nitrogen Dioxide (NO <sub>2</sub> )	28
	2.2.2	Particulate Matter (PM <sub>10</sub> )	38
	2.2.3	Benzene	42
_	2.2.4	Summary of Compliance with AQS Objectives	45
3	New	/ Local Developments	46
	3.1	Road Traffic Sources	46
	3.2	Other Transport Sources	46
	3.3	Industrial Sources	46
	3.4	Commercial and Domestic Sources	47
	3.5	New Developments with Fugitive or Uncontrolled Sources	48
4	Loc	al / Regional Air Quality Strategy	49
5	Plar	nning Applications	50
6	Air	Quality Planning Policies	56
7	Loc	al Transport Plans and Strategies	58
8	Clin	nate Change Strategies	60
9	Imp	lementation of Action Plans	61
10		clusions and Pronosed Actions	78
10	10.1	Conclusions from New Manitoring Data	
	10.1		10
	10.2		79
_	10.3	Proposed Actions	79
11	Refe	erences	80

Appendix B: USA Additional Information9	0
Road Traffic Sources	1
Narrow Congested Streets with Residential Properties Close to the Kerb9	)1
Busy Streets Where People May Spend 1-hour or More Close to Traffic . 9	1
Roads with a High Flow of Buses and/or HGVs.	2
Junctions9	2
New Roads Constructed or Proposed Since the Last Round of Review and	d
Assessment9	2
Roads with Significantly Changed Traffic Flows	2
Bus and Coach Stations	3
Other Transport Sources	4
Airports	4
Railways (Diesel and Steam Trains)9	4
Stationary Trains	<del>)</del> 4
Moving Trains	<del>)</del> 4
Ports (Shipping)	4
Industrial Sources9	5
Industrial Installations9	5
New or Proposed Installations for which an Air Quality Assessment has been Carried Out $9$	<del>)</del> 5
Existing Installations where Emissions have Increased Substantially or New Relevant	
Exposure has been Introduced9	<del>)</del> 5
New or Significantly Changed Installations with No Previous Air Quality Assessment9	<del>)</del> 5
Major Fuel (Petrol) Storage Depots	5
Petrol Stations	6
Poultry Farms	6
Commercial and Domestic Sources9	7
Biomass Combustion – Individual Installations	7
Biomass Combustion – Combined Impacts	7
Domestic Solid-Fuel Burning9	7
Fugitive or Uncontrolled Sources	8

## Appendices

Appendix A - QA:QC data Appendix B - Full monitoring results

## List of Tables

Table 1.1	Air Quality Objectives included in Regulations for the purpose of Local Air Qua	lity
Man	agement in England	10
Table 2.1	Details of Automatic Monitoring Sites	15
Table 2.2	Details of Non- Automatic Monitoring Sites	26
Table 2.3	Results of Automatic Monitoring for NO <sub>2</sub> : Comparison with Annual Mean	
Obje	ective	30
Table 2.4	Results of Automatic Monitoring for NO <sub>2</sub> : Comparison with 1-hour Mean	
Obje	ective	32
Table 2.5	Results of NO <sub>2</sub> Diffusion Tubes 2013	35
Table 2.6	Results of NO <sub>2</sub> Diffusion Tubes (2007 to 2013)	36
Table 2.7	Results of Automatic Monitoring for PM <sub>10</sub> : Comparison with Annual Mean	
Obje	ective	39
Table 2.8	Results of Automatic Monitoring for PM <sub>10</sub> : Comparison with 24-hour Mean	
Obje	ective	41
Table 2.9	Results of Non-Automatic Monitoring for Benzene	44
Table 7.1	Summary of Applications	54
Table 9.1	Progress towards Action Plan Measures	62
List of Fi	gures	
Figure 2.1	Map of Automatic Monitoring Sites	16
Figure 2.2	Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Sutton Borough	18
Figure 2.3	Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Beddington	19
Figure 2.4	Map of Non-Automatic (Diffusion Tube) Monitoring Sites: South Beddington	20
Figure 2.5	Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Carshalton	21
Figure 2.6	Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Rose Hill	22
Figure 2.7	Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Sutton	23
Figure 2.8	3 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Belmont	24
Figure 2.9	9 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Cheam	25
Figure 2.9	Trends in Annual Mean NO <sub>2</sub> Concentrations Measured at Automatic	
Mon	itoring Sites	31
Figure 2.1	0 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured	
at D	iffusion Tube Monitoring Sites	37
Figure 2.1	1 Trends in Annual Mean PM <sub>10</sub> Concentrations	40

# 1 Introduction

# 1.1 Description of Local Authority Area

The London Borough of Sutton (LBC) is situated in the south of London. It is an outer London Borough comprising a population of just over 190,000 according to the 2011 census. The borough includes the following areas: Beddington, Carshalton, Cheam, Hackbridge, Sutton, Wallington and Worcester Park. Sutton is one of the major metropolitan centres identified in the London Plan. The borough is mostly suburban and therefore relatively affluent although with variations in economic well-being across the borough. The main public transport used in the borough is local rail from the various regional stations and local buses, with good access to Central London. There are small pockets of industry in the borough, particularly in Beddington, close to the boundaries with Merton and Croydon. This area contains a number of waste transfer sites and has been identified by the South London Waste Partnership as the most suitable location for siting an Energy Recovery Facility to handle up to 215,000 tonnes of waste. The main roads that run through the Borough include A217, A24, A232, and A2043. The main sources of air pollutants are the busy and congested roads. Currently, there are no Part A installations in the borough and the Part B industrial and other minor processes that are regulated by the Council are mostly small scale.

During previous rounds of Review and Assessment, areas of exceedence of the Air Quality Objectives were identified and each declared as an Air Quality Management Area (AQMA). Owing to measured and modelled exceedences of the annual mean and 1-hour mean objectives for  $NO_2$  and the annual mean and 24-hour mean objectives for  $PM_{10}$ , and in order to consolidate the areas, the whole of the London Borough of Sutton was designated as an AQMA for both  $NO_2$  and  $PM_{10}$  in June 2013.

## 1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air

Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

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.

Progress Reports 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.

Sutton Council did not produce Progress Reports in the years 2010, 2011 and 2013; neither did they produce a USA in 2012; as such this Progress Report covers the monitoring years 2009-2013. Any sections required as part of a USA have been presented in Appendix B to this document.

# 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 1.1. This table shows the objectives in units of microgrammes per cubic metre  $\mu$ g/m<sup>3</sup> (for carbon monoxide the units used are milligrammes per cubic metre, mg<sup>/</sup>m<sup>3</sup>). Table 1.1.1 includes the number of permitted exceedences in any given year (where applicable).

			Dete to La	
Pollutant	Concentration	Measured as	achieved by	
	16.25 <i>µ</i> g/m <sup>3</sup>	Running annual mean	31.12.2003	
Benzene	5.00 <i>µ</i> g/m <sup>3</sup>	Running annual mean	31.12.2010	
1,3-Butadiene	2.25 <i>µ</i> g/m <sup>3</sup>	Running annual mean	31.12.2003	
Carbon monoxide	10.0 mg/m <sup>3</sup>	Running 8-hour mean	31.12.2003	
Load	0.5 $\mu$ g/m <sup>3</sup>	Annual mean	31.12.2004	
Ledu	0.25 µg/m <sup>3</sup>	Annual mean	31.12.2008	

Table 1.1 Air Quality Objectives included in Regulations for the purpose ofLocal Air Quality Management in England

Nitrogen dioxide	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 <i>µ</i> g/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50 μg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
(gravimetric)	40 <i>µ</i> g/m <sup>3</sup>	Annual mean	31.12.2004
	350 μg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide	125 μg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## **1.4** Summary of Previous Review and Assessments

## **First Round of Review and Assessment**

London Borough of Sutton declared its first Air Quality Management Area (AQMA) along the majority of the main roads in the Borough in March 2001 following the Stage 3 Review and Assessment for  $PM_{10}$  and  $NO_2$ . This found that the main issue with respect to local air quality was emissions from road vehicles, leading to predictions that the  $NO_2$  and  $PM_{10}$  air quality objectives would be exceeded. The findings for the other five LAQM pollutants were that the relevant objectives were likely to be met and therefore an AQMA for these was not needed.

### Second Round of Review and Assessment

In August 2003 LBC carried out a Stage 4 Review and Assessment of air quality in the Borough. The results of the Stage 4 Review and Assessment confirmed the findings of the Stage 3 report and that the Council would not meet the air quality objective requirements for annual mean  $NO_2$  and 24-hour  $PM_{10}$ . Consequently, the AQMA was extended in 2004 to include some additional roads where objectives would also not be met. A map showing the extent of that AQMA can be found in the previous reports.

#### Third Round of Review and Assessment

The third round Updating and Screening Assessment (USA), completed in June 2006, found that  $PM_{10}$  concentrations continued to exceed the annual mean objective where there was relevant exposure within the existing AQMA. For NO<sub>2</sub> it was found that levels at three of the diffusion tube sites would not meet the air quality objective. Therefore a Detailed Assessment would be needed.

A source apportionment study using data from Sutton 5, Beddington Lane, was carried out in 2007 and highlighted a number of issues relating to the levels and potential sources of  $PM_{10}$  in that area.

### Fourth Round of Review and Assessment

Updated monitoring in the 2009 Updating and Screening Assessment USA confirmed that the annual mean  $NO_2$  objective had been widely exceeded at roadside locations across the Borough. The  $PM_{10}$  monitoring in 2008 indicated that the 24-hour mean objective had been exceeded at the Sutton 5 site. Other sites within the Borough had met the objectives. Those results indicated that the existing AQMA should be retained.

Based on these findings from the previous rounds of Review and Assessment and the monitoring data from Sutton 5, a further AQMA was declared in 2010 to cover Beddington Lane and premises alongside.

Following the declaration of the additional AQMA in 2010, additional automatic monitoring was carried out in Beddington Lane and a network of indicative monitors for nitrogen dioxide was set up across the borough. Based on the results from the additional monitoring and, in order to consolidate the previously declared AQMAs, it was decided in 2013 to declare the whole Borough as an AQMA and previous orders were revoked.

# 2 New Monitoring Data

# 2.1 Summary of Monitoring Undertaken

This section provides details of monitoring carried out in 2009-2013, the years covered by this report.

## 2.1.1 Automatic Monitoring Sites

Sutton Borough Council operated four automatic monitoring stations in 2013; two were kerbside sites: ST4 Sutton – Wallington and ST6 Sutton - Worcester Park, both measuring  $NO_2$  and  $PM_{10}$ .

One site was an industrial site: ST8 Sutton - Beddington Lane measuring nitrogen dioxide and  $PM_{10}$ , and one was a suburban background site: ST3 Sutton – Carshalton measuring nitrogen dioxide and ozone.

In previous years, two other sites operated in Beddington. Site ST5 Sutton - Beddington Lane (north) was operational from 2005 until 2012, when it was relocated to site ST8, considered to represent the worst-case location in relation to the emission source. The site ST7 was in place only for a period of 2 years while funding was available. Furthermore, as site ST8 was placed only 300m to the west, there was no need to continue monitoring at ST7.

Further details of these monitoring stations are provided in Table 2.1 and the locations are shown in

Figure 2.1.

Site ID	Site Name	Site Details	Site Type	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	In AQMA ?	Monitoring Technique	Inlet Height (m)	Releva nt Expos ure?	Distance to Kerb of Nearest Road (m)	Does this Location Represent Worst-Case Exposure?
ST3	Sutton - Carshalton	Carshalton Ecology Centre	Suburban Background	527776	164513	NO <sub>2</sub> , O <sub>3</sub>	Y	Chemiluminescence, UV Photometric	3.0	N/A***	50	Ν
ST4	Sutton - Wallington	Woodcote Road	Kerbside	528925	163804	NO <sub>2</sub> , PM <sub>10</sub>	Y	Chemiluminescence, TEOM	1.9	Y (2m)	0.8	Y
ST6	Sutton - Worcester Park	Opposite the Royal British Legion Building, 69-75 Central Road, Worcester Park	Kerbside	522557	165787	NO <sub>2</sub> , PM <sub>10</sub>	Y	Chemiluminescence, TEOM/FDMS	2.8	Y (2m)	1.3	Y
ST8	Sutton - Beddington Lane	Unit A, Prologis Park, 140-142 Beddington Lane	Industrial	529781	166597	NO <sub>2</sub> , PM <sub>10</sub>	Y	Chemiluminescence, TEOM	2.0	N	N/A	Ν
ST5*	Sutton - Beddington Lane (north)	Junction of Brookmead Road & Beddington Lane, Sutton	Industrial	529400	167224	NO <sub>2</sub> , PM <sub>10</sub>	Y	Chemiluminescence, TEOM	3.0	N	4.5m	Ν
ST7**	Sutton - Therapia Lane	LB Sutton Fleet Services Depot, Therapia Lane	Industrial	529780	166850	NO <sub>2</sub> , PM <sub>10</sub>	Y	Chemiluminescence, TEOM	1.8	Y	N/A	N

Table 2.1	Details of	Automatic	Monitoring	Sites
-----------	------------	-----------	------------	-------

\* Site operational from 01/12/2005 to 04/04/2012 \*\* Site operational from 09/02/2010 to 10/02/2012 \*\*\* Background site representative of residential exposure in the area.



Figure 2.1 Map of Automatic Monitoring Sites

## 2.1.2 Non-Automatic Monitoring

Sutton Council undertook monitoring at seven nitrogen dioxide diffusion tube during 2009 – 2013. Eleven new monitoring sites were added in 2013; majority of them installed at school locations across Sutton. The sites were:

- ST01 Abbey Primary School, Rosehill;
- ST02 Avenue Primary School, Belmont;
- ST03 Bandon Hill Primary, South Beddington;
- ST04 Beddington Park Primary, Beddington;
- ST05 St Cecilia's Primary, Cheam;
- ST06 St Mary's Infants School, Carshalton;
- ST07 Hackbridge Primary, Beddington;
- ST08 Victor Seymour Infants School, Carshalton;
- H1 Hackbridge Road, Beddington;
- H2 Clover Way, Beddington; and
- H3 57 London Rd Beddington.

Details of the monitoring sites are shown in Table 2.2, whilst their location is provided in Figure 2.2 through to Figure 2.9.



## Figure 2.2 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Sutton Borough



## Figure 2.3 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Beddington



## Figure 2.4 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: South Beddington



## Figure 2.5 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Carshalton



## Figure 2.6 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Rose Hill







## Figure 2.8 Map of Non-Automatic (Diffusion Tube) Monitoring Sites: Belmont





## Table 2.2 Details of Non- Automatic Monitoring Sites

Site ID	Site Name / Location	Site Type	OS Grid I	Ref (X, Y)	Pollutants Monitored	In AQMA?	Triplicate or Co- located Tube? (Y/N)	Site Height (m)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst- case Location?
ST01	Abbey Primary School, Rosehill	Urban background	525516	166514	NO <sub>2</sub>	Y	N	2.2	Y - 10	15	N/A
ST02	Avenue Primary School, Belmont	Urban background	525112	162349	NO <sub>2</sub>	Y	Ν	2.2	Y - 0	8	N/A
ST03	Bandon Hill Primary, South Beddington	Urban background	529667	163769	NO <sub>2</sub>	Y	N	2	Y - 0	30	N/A
ST04	Beddington Park Primary, Beddington	Urban background	530012	165420	NO <sub>2</sub>	Y	N	2	Y - 0	30	N/A
ST05	St Cecilia's Primary, Cheam	Urban background	523874	165778	NO <sub>2</sub>	Y	N	2.2	Y – 0	20	N/A
ST06	St Mary's Infants School, Carshalton	Urban background	527627	164714	NO <sub>2</sub>	Y	Ν	2	Y – 0	20	N/A
ST07	Hackbridge Primary, Beddington	Urban background	528398	166016	NO <sub>2</sub>	Y	Ν	2.2	Y - 0	35	N/A
ST08	Victor Seymour Infants School, Carshalton	Urban background	527810	164989	NO <sub>2</sub>	Y	Ν	2	Y - 0	5	N/A
ST32	Alcorn Close, Rosehill	Urban background	525187	165856	NO <sub>2</sub> , benzene	Y	N	1.5	N	25	N/A

Site ID	Site Name / Location	Site Type	OS Grid	Ref (X, Y)	Pollutants Monitored	In AQMA?	Triplicate or Co- located Tube? (Y/N)	Site Height (m)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst- case Location?
ST33	Carshalton Road, Sutton	Roadside	526059	164025	NO <sub>2</sub>	Y	Ν	2.0	Y - 3	1	Y
ST36	Croydon Rd, Beddington	Roadside	530643	164826	NO <sub>2</sub> , benzene	Y	N	2.5	Y - 0	1	Y
ST37	St Nicholas Way, Sutton	Urban background	525712	164498	NO <sub>2</sub> , benzene	Y	N	2.0	Y - 8	5	N/A
ST38	Devonshire Primary School, Belmont	Urban background	526109	163201	NO <sub>2</sub> , benzene	Y	N	2.0	Y - 2	10	N/A
ST40	High Street, Cheam	Roadside	524369	163583	NO <sub>2</sub>	Y	N	2.0	Y - 3	1	Y
ST41	Benhill Rd Allotments, Benhilton	Urban background	526568	165160	NO <sub>2</sub>	Y	N	1.5	N	30	N/A
H1	Hackbridge Road, Beddington	Roadside	528349	166069	NO <sub>2</sub>	Y	N	2.5	Y- 0.5	1	N/A
H2	Clover Way, Beddington	Urban background	528442	166288	NO <sub>2</sub>	Y	Ν	2.5	Y - 0	1	Y
H3	57 London Rd, Beddington	Urban background	528556	165853	NO <sub>2</sub>	Y	Ν	2.5	Y - 0	1	Y

# 2.2 Comparison of Monitoring Results with Air Quality Objectives

## 2.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

There are two Air Quality Objectives for NO<sub>2</sub>, namely:

- the annual mean of 40µg/m<sup>3</sup>, and
- the 1-hour mean of 200µg/m<sup>3</sup> not to be exceeded more than 18 times a year.

### **Automatic Monitoring Data**

The Council monitored NO<sub>2</sub> at four locations in 2013: ST3 Sutton – Carshalton, ST4 Sutton – Wallington, ST6 Sutton - Worcester Park and ST8 Sutton - Beddington Lane. In previous years, continuous monitors for NO<sub>2</sub> were also installed at site ST5 Sutton - Beddington Lane (north) and ST7 Sutton – Therapia Lane. Site ST5 was relocated in 2012 to ST8 Sutton – Beddington Lane.

The monitoring data can be seen in Table 2.3 and Table 2.4 below. Full details of the QA/QC procedure are provided in Appendix A.

Annualisation (short to long term data adjustment) was applied to data capture below 75%. Details of the annualisation are provided in Appendix A. Where data capture was below 90% the 99.8th percentile has also been reported for the hourly objective.

At the time of preparing this report, the ratified data for  $NO_2$  was not available, therefore the following results should be treated with caution:

- Sutton Carshalton, 2013;
- Sutton Wallington, 2013;
- Sutton Worcester Park, 2013;
- Sutton Beddington Lane, 2013;
- Sutton Beddington Lane (north), 2012;
- Sutton Therapia Lane, 2012.

Monitoring results indicate that the annual mean objective and the 1-hour objective were met over the monitoring period at the background monitoring site ST3 Sutton – Carshalton and the industrial site ST8 Sutton – Beddington Lane.

The annual mean NO<sub>2</sub> objective was exceeded at both kerbside locations: ST4 Sutton – Wallington and ST6 Sutton – Worcester Park over the monitoring period. The site ST4 Sutton –Wallington showed high annual mean concentrations, in the range of 70  $\mu$ g/m<sup>3</sup>. This site has also exceeded the 1-hour mean objective over the whole monitoring period.

Figure 2.10 shows the trend in NO<sub>2</sub> concentration at the monitoring locations.

This shows that annual mean concentrations remained fairly stable at two of the monitoring sites: the background monitoring site ST3 Sutton – Carshalton and the industrial site ST8 Sutton - Beddington Lane. Site ST3 Sutton – Carshalton measured concentrations below the objectives in all monitoring years. Site ST8 Sutton - Beddington Lane was below the objective since it started operation in 2012.

The annual mean concentrations peaked in 2009-2010 at the kerbside sites ST4 Sutton – Wallington and ST6 Sutton - Worcester Park, and have been decreasing in the following years.

Site ID	Site Name	Site Type	Within AQMA?	Annual Mean Concentration, μg/m <sup>3</sup> / (Data Capture, %)								
ID		one type		2007	2008	2009	2010	2011	2012	2013		
ST3	Sutton - Carshalton	Suburban Background	Y	33 (97%)	31 (98%)	31.2 (95%)	30.9 (94%)	27.2 (79%)	28.7 (87%)	31.7 <sup>a</sup> (74%)		
ST4	Sutton - Wallington	Kerbside	Y	<u>83</u> (94%)	<u>77</u> (99%)	<b>78.8</b> (96%)	<b>73.3</b> (99%)	<u>69.7</u> ª (60%)	<u><b>71.8</b></u> (95%)	<u>69.6ª</u> (53%)		
ST6	Sutton - Worcester Park	Kerbside	Y	-	<b>50</b> ª (15%)	<b>57.4</b> (99%)	<b>58.0</b> (99%)	<b>56.5</b> (99%)	<b>54.5</b> (97%)	<b>49.0</b> (99%)		
ST8	Sutton - Beddington Lane	Industrial	Y	-	-	-	-	-	35.7 <sup>a</sup> (44%)	36.0 (93%)		
ST5*	Sutton - Beddington Lane (north)	Industrial	Y	37 (97%)	39 (88%)	<b>41.6</b> (92%)	<b>45.0</b> (85%)	38.2 (99%)	39.0 <sup>a</sup> (17%)	-		
ST7**	Sutton - Therapia Lane	Industrial	Y	-	-	-	33.9 (85%)	30.7 (95%)	35.9 <sup>ª</sup> (11%)	-		

Table 2.3 Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with Annual Mean Objective

\* Site operational from 01/12/2005 to 04/04/2012 \*\* Site operational from 09/02/2010 to 10/02/2012 <sup>a</sup> Results were annualised in accordance with the methodology laid out in TG(09) Box 3.2.

In **bold**, exceedence of the NO<sub>2</sub> annual mean AQS objective of 40  $\mu$ g/m<sup>3</sup> Underlined, result over 60  $\mu$ g/m<sup>3</sup>





\* Site operational from 01/12/2005 to 04/04/2012

\*\* Site operational from 09/02/2010 to 10/02/2012

			Within	hin Number of Hourly Means > 200µg/m <sup>3</sup>								
Site ID	Site Name	Site Type	AQMA ?	2007	2008	2009	2010	2011	2012	2013		
ST3	Sutton - Carshalton	Suburban Background	Y	2	0	0	0	0 (108.0)	0 (126.6)	1 (136.4)		
ST4	Sutton - Wallington	Kerbside	Y	263	168	200	72	<b>47</b> (218.8)	133	<b>69</b> (248.7)		
ST6	Sutton - Worcester Park	Kerbside	Y	-	11 (230.4)	12	5	10	13	8		
ST8	Sutton - Beddington Lane	Industrial	Y	-	-	-	-	-	0 (132.6)	9		
ST5*	Sutton - Beddington Lane (north)	Industrial	Y	7	6 (141.1)	1	2 (158.8)	0	2 (179.6)	-		
ST7**	Sutton - Therapia Lane	Industrial	Y	-	-	-	0 (112.9)	1	0 (130.4)	-		

## Table 2.4 Results of Automatic Monitoring for NO<sub>2</sub>: Comparison with 1-hour Mean Objective

\* Site operational from 01/12/2005 to 04/04/2012

\*\* Site operational from 09/02/2010 to 10/02/2012

If the period of valid data is less than 90%, the 99.8<sup>th</sup> percentile of hourly means is included in brackets In **bold**, exceedence of the NO<sub>2</sub> 1-hour mean AQS objective (200  $\mu$ g/m<sup>3</sup> not to be exceeded more than 18 times a year)

### **Diffusion Tube Monitoring Data**

The  $NO_2$  diffusion tube data are summarised in Table 2.5. The full datasets for 2009-2013 (monthly mean values) are included in Appendix A.

Less than 75% data capture was achieved for 2013 due to reviewing and updating the network, which introduced new sites that open in August 2013. As a result, short to long term adjustment calculations (annualisation) were applied to all sites with data capture of 3 months and above. The details of the annualisation can be found in Appendix A. Sites with lower data capture were not annualised as the monitoring period was too short to be representative of annual exposure. There were no data that needed to be annualised in 2012 or previous years.

The diffusion tube results for 2009 until 2012 have been adjusted using bias adjustment factors from the national database of co-location studies; further details are provided in Appendix A.

For the 2013 data set there were three sites where the annual mean AQS objective for  $NO_2$  was exceeded; these were:

- ST40 High Street, Cheam;
- H1 Hackbridge Road, Beddington; and
- H3 57 London Road, Beddington.

The site ST40 High Street, Cheam, showed consistent exceedences of the annual mean objective across the monitoring period. The site ST33 (Carshalton Road, Sutton) was close to the objective in 2013 and previous years and had showed exceedences up till 2010.

The new sites H1 and H2 have been categorised as Urban Background sites as they are set back from the road; however they are close enough for air quality at those locations to be affected by nearby major roads as shown by the results. As monitoring at both sites was carried out for three months only, there is greater uncertainty in the annual mean results compared to the annual mean calculated using a full data set. Therefore, it is recommended that monitoring continues at those locations to establish existing concentrations.

There are no sites exceeding 60  $\mu$ g/m<sup>3</sup>, which would be an indication of a potential exceedence of the 1-hour NO<sub>2</sub> objective.

A comparison with previous results (Table 2.6) shows that all sites in general showed a decreasing trend since 2010. Concentrations in 2013 were lower than those observed in 2012, this trend should however be treated with caution due to low data capture in 2013.

Table 2.5	Results	of NO <sub>2</sub>	Diffusion	Tubes	2013
-----------	---------	--------------------	-----------	-------	------

Site ID	Site Name/Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2013 (Number of Months)	2013 Annual Mean Concentration (μg/m <sup>3</sup> ) – Bias Adjustment Factor = 0.95
ST01	Abbey Primary School, Rosehill	Urban background	Y	N	3	23.2 <sup>a</sup>
ST02	Avenue Primary School, Belmont	Urban background	Y	N	1	( <b>46.3</b> <sup>a</sup> )
ST03	Bandon Hill Primary, South Beddington	Urban background	Y	Ν	3	21.4 <sup>ª</sup>
ST04	Beddington Park Primary, Beddington	Urban background	Y	N	3	22.0 <sup>a</sup>
ST05	St Cecilia's Primary, Cheam	Urban background	Y	N	3	28.6 <sup>a</sup>
ST06	St Mary's Infants School, Carshalton	Urban background	Y	N	3	22.8 <sup>a</sup>
ST07	Hackbridge Primary, Beddington	Urban background	Y	N	3	23.4 <sup>ª</sup>
ST08	Victor Seymour Infants School, Carshalton	Urban background	Y	N	2	(22.8 <sup>a</sup> )
ST32	Alcorn Close, Rosehill	Urban background	Y	N	5	25.3 <sup>ª</sup>
ST33	Carshalton Road, Sutton	Roadside	Y	N	5	39.6 <sup>a</sup>
ST36	Croydon Rd, Beddington	Roadside	Y	N	5	34.1 <sup>a</sup>
ST37	St Nicholas Way, Sutton	Urban background	Y	N	3	26.5 <sup>a</sup>
ST38	Devonshire Primary School, Belmont	Urban background	Y	N	2	(19.1 <sup>ª</sup> )
ST40	High Street, Cheam	Roadside	Y	N	5	<b>46.5</b> <sup>a</sup>
ST41	Benhill Rd Allotments, Benhilton	Urban background	Y	Ν	5	19.6 <sup>ª</sup>
H1	Hackbridge Road, Beddington	Urban background	Y	N	3	<b>42.1</b> <sup>a</sup>
H2	Clover Way, Beddington	Urban background	Y	N	2	(40.2 <sup>a</sup> )
H3	57 London Rd, Beddington	Urban background	Y	N	3	<b>42.1</b> <sup>a</sup>

<sup>a</sup> Results were annualised in accordance with the methodology laid out in TG(09) Box 3.2. Data in brackets were provided for orientation only. They are short-term averages and although they were annualised they should not be compared to the annual mean NO<sub>2</sub> objective.

	Site Type	Within AQMA?	Annual Mean Concentration (μg/m <sup>3</sup> ) – Adjusted for Bias						
Site ID			2007 (Bias Adjustment Factor = 0.98)	2008 (Bias Adjustment Factor = 0.93)	2009 (Bias Adjustment Factor = 0.97)	2010 (Bias Adjustment Factor = 1.03)	2011 (Bias Adjustment Factor = 0.95)	2012 (Bias Adjustment Factor = 1.02)	2013 (Bias Adjustment Factor = 0.95)
ST32	Urban background	Y	32.4	31.3	34.4	34.4	30.8	31.5	25.3
ST33	Roadside	Y	45.6	41.2	43.2	45.2	36.6	36.1	39.6
ST36	Roadside	Y	36.6	31.8	31.4	36.9	30.6	32.5	34.1
ST37	Urban background	Y	32.0	29.3	29.2	31.6	25.0	28.6	26.5
ST38	Urban background	Y	21.3	18.1	16.5	20.0	16.2	18.9	-
ST40	Roadside	Y	54.6	53.9	51.4	52.7	47.4	50.0	46.5
ST41	Urban background	Y	22.0	20.8	19.9	21.0	16.9	19.8	19.6

## Table 2.6 Results of NO2 Diffusion Tubes (2007 to 2013)




The above figure shows the trend in  $NO_2$  concentration for the long term sites located in Sutton Council. Two sites showed exceedences of the annual mean  $NO_2$  objective across the monitoring period; these were sites ST33 and ST40. Peak concentrations were observed in the years 2007 and 2010. All sites generally showed a decreasing trend since 2010. The lowest results were recorded in 2011. Concentrations in 2013 were lower than those observed in 2012, this trend should however be treated with caution due to low data capture in 2013.

### 2.2.2 Particulate Matter (PM<sub>10</sub>)

There are two Air Quality Objectives for PM<sub>10</sub>, namely:

- the annual mean of 40µg/m<sup>3</sup>; and
- the 24-hour mean of  $50\mu g/m^3$  not to be exceeded more than 35 times a year.

The Council undertook monitoring of  $PM_{10}$  using a Tapered Element Oscillating Microbalance (TEOM) monitors at three sites in 2013: kerbside sites ST4 Sutton – Wallington and ST6 Sutton - Worcester Park, and industrial site ST8 Sutton - Beddington Lane. A Filter Dynamics Measurement System (FDMS) has been installed at ST6 Worcester Park. In previous years, TEOM monitors for  $PM_{10}$  were also installed at industrial sites ST5 Sutton - Beddington Lane (north) and ST7 Sutton – Therapia Lane. Site ST5 was relocated in 2012 to ST8 Sutton – Beddington Lane.

The monitoring data can be seen in Table 2.3 and Table 2.4 below. Full details of the QA/QC procedure are provided in Appendix A.

Annualisation (short to long term data adjustment) was applied to data capture below 75%. Details of the annualisation are provided in Appendix A. Where data capture was below 90% the 90.4th percentile has also been reported for the 24-hour mean objective.

At the time of preparing this report, not all data for  $NO_2$  was fully retified, therefore the following results should be treated with caution:

- Sutton Wallington, 2013: data for PM<sub>10</sub> have not been ratified.
- Sutton Beddington Lane, 2013: data for PM<sub>10</sub> have not been ratified.
- Sutton Beddington Lane (north), 2012: data for PM<sub>10</sub> have been only partially ratified.
- Sutton Therapia Lane, 2012: data for PM<sub>10</sub> have been only partially ratified.

The 2009-2013 results show that the annual mean and the 24-hour mean objectives were met at all monitoring sites during that period. Both kerbside sites ST4 and ST6 have displayed similar concentration trends since 2011 when they both increased, following which there was a decrease in concentrations during 2012 and 2013. The industrial site ST8 also showed a decrease in concentrations when compared to 2012 results.

Site ID	Site Name	Site Type	Within	hin Annual Mean Concentration (µg/m <sup>3</sup> ) / (Data Capture)								
ID	One Maine	one rype	AQMA?	2007	2008 <sup>P</sup>	2009	2010	2011	2012	2013		
ST4	Sutton - Wallington	Kerbside	Y	29 (96%)	25 (98%)	25.7 (99%)	25.3 (98%)	28.9 <sup>a</sup> (59%)	27.2 (99%)	25.5 <sup>a</sup> (57%)		
ST6	Sutton - Worcester Park	Kerbside	Y	-	27.0 <sup>a</sup> (14%)	26.1 <sup>a</sup> (58%)	25.5 <sup>a</sup> (63%)	31.4 (79%)	28.3 (98%)	27.7 <sup>a</sup> (73%)		
ST8	Sutton - Beddington Lane	Industrial	Y	-	-	-	-	-	29.8 <sup>a</sup> (56%)	22.2 (94%)		
ST5*	Sutton - Beddington Lane (north)	Industrial	Y	30 (90%)	28 (91%)	29.0 (97%)	28.7 (93%)	28.0 (100%)	24.1 <sup>ª</sup> (26%)	-		
ST7**	Sutton - Therapia Lane	Industrial	Y	-	-	-	25.6 (88%)	26.5 (99%)	24.5 <sup>a</sup> (10%)	-		

Table 2.7 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with Annual Mean Objective

\* Site operational from 01/12/2005 to 04/04/2012 \*\* Site operational from 09/02/2010 to 10/02/2012 a Results were annualised in accordance with the methodology set in TG(09) Box 3.2. P Data used to calculate results in 2008 were provisional.

In **bold**, exceedence of the  $PM_{10}$  annual mean AQS objective of 40  $\mu$ g/m<sup>3</sup>



#### Figure 2.12 Trends in Annual Mean PM<sub>10</sub> Concentrations

Figure 2.12 shows the trend in annual mean PM<sub>10</sub> concentrations at the continuous monitoring sites between 2007 and 2013. This shows that throughout monitoring period the ST6 Worcester Park kerbside site has had consistently higher concentrations of PM<sub>10</sub> than the ST4 Wallington kerbside location. Both sites have displayed similar concentration trends since 2011 when they both increased, following which there was a decrease in concentrations during 2012 and 2013. All monitoring sites measured annual mean concentrations below the objective in all years.

	Site Name	Sito Typo	Within			Number o	of Daily Means	> 50µg/m³	_	
Site ID	Site Name	Site Type	AQMA ?	2007	2008 <sup>P</sup>	2009	2010	2011	2012	2013
ST4	Sutton - Wallington	Kerbside	Y	29	13	6	5	4 (37.8)	23	6 (39.3)
ST6	Sutton - Worcester Park	Kerbside	Y	-	4 (43.5)	16 (44.7)	12 (40.4)	31 ( <b>50.3</b> )	21	20 (44.3)
ST8	Sutton - Beddington Lane	Industrial	Y	-	-	-	-	-	10 (43.6)	5
ST5*	Sutton - Beddington Lane (north)	Industrial	Y	44	20	18	20	25	17 ( <b>59.2</b> )	-
ST7**	Sutton - Therapia Lane	Industrial	Y	-	-	-	6 (40.0)	22	3 (44.0)	-

### Table 2.8 Results of Automatic Monitoring for PM<sub>10</sub>: Comparison with 24-hour Mean Objective

\* Site operational from 01/12/2005 to 04/04/2012 \*\* Site operational from 09/02/2010 to 10/02/2012 <sup>P</sup> Data used to calculate results in 2008 were provisional.

If the period of valid data is less than 90%, the 90.4<sup>th</sup> percentile of 24-hour means is included in brackets In **bold**, exceedence of the  $PM_{10}$  24-hour mean AQS objective (50 µg/m<sup>3</sup> not to be exceeded more than 35 times a year)

### 2.2.3 Benzene

In addition to NO<sub>2</sub> diffusion tube monitoring the Council also undertook monitoring of benzene using passive diffusion tubes at two roadside and three background sites. The tubes were supplied by Bureau Veritas and analysed by Gradko International Limited.

All of the tubes with the exception of ST5 were co-located with  $NO_2$  diffusion tubes. The location of the monitored sites and annual mean results are given in

### Table 2.9.

Annualisation was required for one site only – site ST5 - where data capture was below 75% in 2011. Details of the annualisation are provided in Appendix A.

Although no significant sources of benzene had been identified in the borough, monitoring using diffusion tubes was carried out as a check. All monitoring sites were in compliance with the annual mean objective for benzene across the monitoring period. As no new sources were introduced and the monitoring data showed compliance, the monitoring ceased in 2012.

Site ID	Site Name /	Site Type	OS Grid Ref (x. v)		Annual Mean Concentration, μg/m <sup>3</sup> / (Data Capture, %)							
ID	Location				2007	2008	2009	2010	2011	2012		
ST1	Site of former Paynes Poppets, Croydon Road	Roadside	530687	164837	1.8 (100%)	1.7 (100%)	1.6 (100%)	1.1 (83%)	1.4 (83%)	3.3 (83%)		
ST2	Devonshire Primary School, Devonshire Ave, Sutton	Urban background	526158	163221	1.5 (100%)	1.6 (92%)	1.4 (100%)	1.0 (83%)	1.5 (83%)	3.3 (100%)		
ST3	Alcorn Close, Sutton	Roadside	525180	165832	1.6 (91.7%)	1.7 (100%)	1.6 (100%)	1.2 (83%)	1.5 (100%)	3.6 (92%)		
ST4	Robin Hood Junior School, Thorncroft Road, Sutton	Urban background	525712	164498	1.7 (100%)	1.7 (100%)	1.5 (100%)	1.2 (75%)	1.3 (92%)	3.5 (100%)		
ST5	The Lodge, Honeywood Walk, Carshalton	Urban background	527801	164568	1.6 (100%)	1.8 (100%)	1.5 (100%)	1.1 (75%)	1.5 <sup>a</sup> (67%)	3.5 (100%)		

### Table 2.9 Results of Non-Automatic Monitoring for Benzene

<sup>a</sup> Results were annualised in accordance with the methodology set in TG(09) Box 3.2.

### 2.2.4 Summary of Compliance with AQS Objectives

Sutton Council has examined the results from monitoring in the Borough. Concentrations within the AQMA still exceed the objectives for nitrogen dioxide at relevant locations; as such the AQMA should remain.

Concentrations of  $PM_{10}$  have been compliant with the objectives at relevant locations. While a number of significant developments are proposed, it is envisaged that planning and other regulatory controls will limit the impacts from these new developments. If monitoring shows that there is continued compliance with the objectives once the sites are operational, the Council will consider revocation of the AQMA for  $PM_{10}$ .

### 3 New Local Developments

### 3.1 Road Traffic Sources

LAQM requires local authorities to consider the following:

- Narrow congested streets with residential properties close to the kerb;
- Busy streets where people may spend one hour or more close to traffic;
- Roads with a high flow of buses and/or HGVs;
- Junctions;
- New roads constructed or proposed;
- Roads with significantly changed traffic flows; or
- Bus or coach stations.

Sutton Council confirms that of the above categories there have been no new or newly identified sources which have not been considered in previous rounds of review and assessment.

### 3.2 Other Transport Sources

LAQM requires local authorities to consider the following:

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

Sutton Council confirms there are no newly identified or newly implemented other transport sources, which may have an impact on air quality within the Local Authority area.

### 3.3 Industrial Sources

LAQM requires local authorities to consider the following:

• Industrial Installations: new or proposed;

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

In 2009, there were 55 permitted installations (Part B) within the Borough. At end of 2013, there were 51 permitted installations (Part B) within the Borough.

Since the last report, Sutton Council has issued 5 new permits (2 concrete batching, 2 dry cleaners and 1 vapour recovery). During this same period, 9 permits have been surrendered/revoked. These were 3 vehicle resprayers, 5 dry cleaners and 1 mobile crusher.

There are no poultry farms in the Borough.

There are no petrol storage depots or petrol stations which meet the following criteria:

- Annual throughput of more than 2000 m<sup>3</sup> of petrol, situated near a busy road (more than 30,000 vehicles per day) and
- Relevant exposure present within 10 m of the pumps.

Sutton Council confirms that there are no new or newly identified industrial sources (either under the LAPC regime or EP Regulations) which may have an impact on air quality within the Local Authority area.

### 3.4 Commercial and Domestic Sources

LAQM requires local authorities to consider the following:

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

Sutton Council confirms that of the above categories there have been no new or newly identified sources which have not been considered in previous rounds of review and assessment.

# 3.5 New Developments with Fugitive or Uncontrolled Sources

LAQM requires local authorities to consider the following:

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

Sutton Council confirms that of the above categories there have been one waste transfer station that was a major source of dust complaints and which has closed. Other sites have changed hands, applied for retrospective planning permission or changed hands but no new sites have become operational.

Sutton Council confirms that there is one newly identified local development which may have an impact on air quality within the Local Authority area.

Sutton Council confirms that all the following have been considered:

- Road traffic sources
- Other transport sources
- Industrial sources
- Commercial and domestic sources
- New developments with fugitive or uncontrolled sources.

### 4 Local / Regional Air Quality Strategy

The Mayor of London is required to produce an Air Quality Strategy for London and, in 2010, 'Clearing The Air' was published which set out details of proposals for cleaning and improving the air in the capital. The measures contained in the Mayor's Air Quality Strategy and supporting Guidance Documents are used to inform policies and decision-making at the local authority level.

The London Borough of Sutton has prepared an Air Quality Action Plan for the AQMA that was designated in 2013. The Action Plan contains a programme of 34 measures aimed at improving air quality across the borough. The Action Plan carries forward many of the measures that were introduced when the previous AQMAs were declared. Therefore, the intention is to review and update the Plan in 2015.

### 5 Planning Applications

Detailed below are major planning applications, which have been identified as having the potential to impact air quality. An air quality assessment forms a requirement of the planning process for most large developments.London Borough of Sutton will direct applicants to the guidance produced by Environmental Protection UK and the Institure for Air Quality Management and, in general, the standard format for assessing the impacts and their significance contained in these guidance documents is used. The following planning applications were considered between 2009-2013 which have the potential to impact upon air quality (details in the text and

Table 5.1 below).

## Planning application D2012/66220 – Beddington Farmlands Waste Facility, Beddington Lane, Beddington

The Air Quality Assessment, submitted by the applicant as part of the Environmental Statement (ES), considered the impacts during construction and operation. The latter included the impacts from road vehicles and stack emissions.

The assessment of the risk from construction dust concluded that mitigation measures would be put in place and that these would be effective in controlling dust during the construction phase. On that basis, and following the EPUK template, the assessment concluded that construction activities present a low risk to the closest residential and commercial properties, principally because, the distance from the source of any dust generation to these receptors is considerable.

The impacts of road vehicle emissions concluded that the additional concentrations of all the pollutants considered are of imperceptible magnitude and therefore are not significant.

Regarding the impact of stack emissions, the operation of the plant will result in some additional concentrations and deposition of a number of pollutants. However, owing to the abatement technology to be used and the mitigation measures being employed, the magnitude of these impacts was described as negligible or small for most pollutants (including those regulated by national air quality objectives), over the short term and long term. As such the impacts were categorised as not significant. The conclusions were based

on the assumption that the ERF emits each pollutant at a rate and concentration in the flue gases that is at the legal limit permitted by the WID. If the same assumption was applied to a number of metals, then the impact for these metals would be medium or large. However, such scenario was not considered realistic.

## Planning application D2010/63071 – Country Waste Recycling Ltd., 79-83 Beddington Lane, Beddington

The Air Quality Assessment acknowledged that a number of complaints relating to dust emissions and mud tracked out of the application site onto Beddington Lane have been made by businesses close to the application site on the other side of Beddington Lane.

The Assessment concluded that as there are no medium or highly sensitive receptors, nor any relevant public exposure to  $PM_{10}$  within 200m of the application site, the impact from dust during construction will be insignificant. The emissions of dust during plant operations were also assessed as not significant due to the improved layout of the application site and enclosure of site activities, and the mitigation measures recommended.

The application was permitted with attached conditions requiring the developer to implement specific dust mitigation measures.

Since this time, the site has been closed and sold to new operators. While there is extant planning permission on this site, new proposals have been submitted which will supersede the previously approved application.

### Planning application D2009/61962 / D2012/66219 / D2014/69228 – Gasification (BioFlame) plant, Rear of 87 Beddington Lane & 79-85 Beddington Lane, Beddington

The application submitted in 2009 was permitted on appeal. The original supporting statement concluded that atmospheric emissions and deposition would be assessed as part of the Environmental Permit application. Subsequently submitted air quality assessment predicted negligible dust impacts during construction phase at receptors of high and medium sensitivity. The change in the number of vehicle movements on Beddington Lane associated with the proposed development was concluded not to be significant and, as such, would not add to dust re-suspension on Beddington Lane. The permission was not implemented and, as set out above, an application for an alternative waste handling process is now being considered.

## Planning application D2013/68217- Energy from Waste (EfW) Plant, 154A Beddington Lane and land fronting Coomber Way, Beddington

The facility will use pyrolysis technology to produce energy from waste. The impacts of dust from construction activities was not assessed as the buildings which are to house the process already exist on site. Emissions from traffic were also scoped out of the assessment.

Detailed dispersion modelling was undertaken using the atmospheric dispersion model ADMS V5 for the minimum stack height determined in accordance with the Technical Guidance Note D1.

Changes to annual mean  $NO_2$  concentrations were predicted to be imperceptible at all assessed receptors. With regards to 1-hr mean  $NO_2$ , concentrations were predicted to be small for four receptors and imperceptible at all other receptors assessed. On that basis the impacts of the operation of the proposed scheme on local  $NO_2$  concentrations were considered insignificant.

## Planning application D2010/63252 - Recycling Centre, 124 Beddington Lane, Beddington

The applicant confirmed in the Supporting Statement that the proposed operations will take place in an enclosed building and vehicles entering the site will have full sheeting to prevent dust emissions. The business went into liquidation in 2014; however stockpiles of waste remain stored in the open on the site. Although these have the potential to generate fugitive dust emissions, the stockpiles have self-seeded which limits the amount of wind-blown dust from the piles. The local authority and the Environment Agency are now working with the landlord to identify a suitable long-term solution.

### Planning application D2012/65693 – ASDA, 116 Beddington Lane, Beddington

There shall be provision for 80,000Ltr petrol and 80,000Ltr diesel storage in two underground tanks.

The following criteria determine whether a petrol station has the potential to impact on air quality due to emissions of benzene:

 Annual throughput of more than 2000 m<sup>3</sup> of petrol, situated near a busy road (more than 30,000 vehicles per day) and not fitted with Stage 2 vapour recovery system; and Relevant exposure present within 10 m of the pumps.

It has been confirmed that traffic on the adjacent road will be below 30,000 vehicles per day. Therefore, there is no risk of benzene objective being exceeded as a result of this development.

## Planning application D2013/67833 – Recycling Centre, 112 Beddington Lane, Beddington

This application was for a variation of conditions of previously approved application to continue use of site as a recycling centre (waste management facility). The variation was not considered likely to affect air quality. The permission also included conditions to further control dust which, when implemented, should lead to an improvement in local air quality.

## Planning application B2013/68306 – Mixed-use development including CHP plant, Old Gas Works, 287 - 323 High Street and land fronting Crown Road and Vale Road, Sutton

The Air Quality Assessment submitted with the application examined the effects of the construction and operational phases of the development.

It was predicted that the construction activities would have negligible to moderate adverse residual effects from construction-related dust Construction vehicles entering and leaving the site were assessed to have, at worst, minor adverse effects, during peak construction periods, and negligible at all other times in the context of local background pollutant concentrations and existing local road traffic emissions.

The likely residual effects of exhaust emissions from plant operating on the site were assessed as negligible in the context of existing adjacent road traffic exhaust emissions.

After completion, the effect of operational traffic and heating plant at existing receptors was predicted to result in negligible effect on local concentrations of  $NO_2$ ,  $PM_{10}$  and  $PM_{2.5}$ .

Demolition work has now started on the Site. As the Development is constructed in the centre of Sutton, it is recommended that monitoring continues at relevant locations within Sutton to confirm the impact of the development on local air quality as existing annual mean NO<sub>2</sub> concentrations around Sutton have been shown to be close to or exceeding the pbjective (Site ST33).

Planning Reference /Decision	Location	Description	Additional Information
D2012/66220 Permitted	Beddington Farmlands Waste Management Facility, Beddington Lane, Beddington CR0 4TD	Demolition of existing buildings and development of an energy recovery facility (ERF) and buildings ancillary to the ERF, construction of two combined heat and power (CHP) pipelines, revisions to the approved restoration plan for the Beddington landfill site, amendments to the existing in-vessel composting operations, removal of existing access and provision of new access road and reconfiguration of access to Thames Water site to north.	Application received on 17 July 2012; decision on 14 March 2014.
D2010/63071 Permitted	Country Waste Recycling Ltd., 79-83 Beddington Lane, Beddington, Surrey CR0 4TH	Retrospective application for temporary permission for continued use of land and buildings and retention of associated operational development as waste transfer, processing and recycling facility.	The facility had previously given rise to a number of complaints about dust. Application received on 9 July 2010; decision on 06 July 2011.
D2009/61962	Rear of 87 Beddington Lane & 79-85 Beddington Lane, Beddington	Demolition of two existing buildings and erection of a gasification plant for the generation of renewable energy from waste wood and other high biomass waste.	Date received: 03 November 2009 Decision Date: 04 March 2010
D2012/66219	79-85 Beddington Lane, Beddington	Submission of required restoration works for continued use of land and buildings and retention of associated operational development as a waste transfer, processing and recycling facility (variation of condition of previous application).	Date received: 23 July 2012 Decision Date: 17 October 2012
D2014/69228	79-85 Beddington Lane Beddington	Provision of flue stack above roof line of main processing building (variation of condition of previously approved application).	Date received: 27 March 2014 Pending decision
D2013/68217 Permitted	154A Beddington Lane and land fronting Coomber Way, Beddington	Use of the Energy from Waste (EfW) Plant.	Date received: 30 September 2013 Decision Date: 29 May 2014
D2010/63252 Permitted	124 Beddington Lane, Beddington	Use of premises as an enclosed recycling centre.	Date received: 19 August 2010 Decision Date: 25 May 2011
D2012/65693 Permitted	ASDA, 116 Beddington Lane, Beddington	Erection of a six pump self service filling station with underground fuel tanks.	Date received: 19 August 2010 Decision Date: 25 May 2011
D2013/67833 Permitted	112 Beddington Lane, Beddington	Variation of conditions of previously approved app. no. D2010/63752 in connecting with original application no. 2009/61477/FUL to continue use of site as a recycling centre;	Date received: 19 July 2013 Decision Date: 19 December 2013
B2013/68306 Permitted	Old Gas Works, 287 - 323 High Street and land fronting Crown Road and Vale Road, Sutton	Demolition of existing buildings/gas holders and redevelopment of the site for a mixed use retail/residential scheme comprising the construction	Date received: 24 October 2013 Decision Date: 23 January 2014

 Table 5.1
 Summary of Applications

of a supermarket (12,221 sqm GEA)	
above a car park providing 346	
spaces fronting on Crown Road.	
The remainder of the site will	
comprise four principally residential	
buildings (below 200 units) with	
retail units. An energy centre to	
provide a decentralised heat	
network incorporating Combined	
Heat & Power (CHP) along with	
photovoltaic panels will be provided	
to serve the development.	
Alterations were also proposed to	
the surrounding highway including	
changes to surrounding junctions.	

### 6 Air Quality Planning Policies

The Council's Core Strategy (also known as the Core Strategy Development Plan Document (DPD)) was adopted in December 2009. The Core Strategy DPD sets out the key elements of the planning framework for Sutton, consisting of a long-term vision and strategic objectives for the future development of the Borough, and covers a 15-year plan period up to 2024.

The Core Strategy vision of Sutton is underpinned by five themes, derived from those set out in the Sutton Strategy and developed through public consultation:

- Theme 1: Developing Active, Healthy and Inclusive Communities;
- Theme 2: Achieving Environmental Sustainability;
- Theme 3: Encouraging Enterprise and Employment;
- Theme 4: Promoting Sustainable Transport and Accessibility;
- Theme 5: Improving the Streetscene and Living Environment.

The Council has a number of air quality objectives contained as part of Theme 2 and Theme 4, which include reducing car journeys, promotion of sustainable transport and improving transport integration, accessibility and infrastructure.

Adopted in March 2012 was the Site Development Policies DPD, which identifies a range of sites to meet the development needs of the Borough and sets development management policies that need to be considered by developers. Under Policy DM10 – Air Quality developers are expected to assess the impacts of major developments and set out appropriate mitigation measures.

Policy DM10 - Air Quality

(a) Development proposals that would have significant adverse impacts on local air quality, expose the public to air pollution or lead to a breach of the Government's air quality objectives, particularly within identified Air Quality Management Areas (AQMAs), will not be permitted, unless appropriate mitigation measures are put in place to reduce the adverse impacts to acceptable levels.

(b) All planning applications for major developments with potentially significant adverse impacts on air quality, or located within or in the vicinity of an AQMA, should be accompanied by an Air Quality Assessment to assess the extent of the potential impacts and set out the mitigation measures proposed to make the development acceptable. The Council may impose planning conditions or negotiate planning agreements with developers where necessary.

### 7 Local Transport Plans and Strategies

Following consultation, the Council has produced a Sutton Transport Plan, which forms the Local Implementation Plan (LIP) and covers the period 2011/12-2013/2014 and beyond to 2031.

The Plan contains transport proposals and a long-term vision for improving transport in the Borough and sets out an investment programme for the three years from 2011-2014 listing the transport schemes that the council intends to implement over this period.

#### Smarter travel

The Plan priorities programmes that aim to reduce congestion and improve air quality by encouraging 'Smarter Travel'. Smarter travel interventions will include:

- Community roadshows promoting smarter travel at events etc,
- Maintaining the Smarter Travel Sutton website,
- Ambient advertising,
- Cycle roadshow and cycling promotion,
- Cycle training for adults and children,
- Promoting car clubs,
- Car free day promotions,
- School travel plan work,
- Workplace / business travel plan work (including the council's own travel plan),
- Road safety education, training and publicity,
- School visits by Helen Young (ex-BBC weather presenter) discussing climate change,
- Promoting greener driving techniques,
- Promoting zero and low emission vehicles (including greening the council's fleet),
- Implementing the council's Delivery and Servicing Plan and participation in
- EU Trailblazer project.

#### Worcester Park Major Scheme

The Worcester Park major scheme bid is for an Integrated Transport Package to be implemented in 2011/12 and 2012/13.

- The following elements are proposed to form part of the scheme:
- Reducing traffic congestion in Worcester Park, particularly on Central Road
- Improving bus reliability, journey times, and bus stops
- Reducing air pollution in Central Road, an AQMA
- Improving the public realm and pedestrian environment
- Providing improved pedestrian crossing points on Central Road
- Removing obstructive on-street parking, especially at bus stops
- Improving cycle routes and cycle parking
- Reducing 'rat-running' in residential streets
- Improving delivery and servicing facilities
- Promoting and facilitating greater use of sustainable transport
- Improving road safety and personal security.

#### Traffic Management scheme in Carshalton Village on A232 TLRN road

This a traffic management scheme, possibly involving diversion of through traffic along Ruskin Road, to reduce adverse impact of traffic on the historic Carshalton Ponds Conservation area, reduce congestion and air pollution and improve the pedestrian environment of Carshalton High Street. The scheme requires junction and signalling modifications.

## 8 Climate Change Strategies

In 2009 the Council has prepared 'One Planet Living' Strategy which is concerned with tackling the causes of climate change (mitigation).

The Strategy aims to address climate change by reducing carbon dioxide emissions, including targets for zero carbon from buildings and sustainable transport by 2025.

Ten principles of 'One Planet Living' are:

- Zero Carbon Buildings;
- Zero Waste;
- Sustainable Transport;
- Local and Sustainable Materials;
- Local and Sustainable Food;
- Sustainable Water;
- Biodiversity;
- Culture and Heritage;
- Equity and Fair-trade;
- Health and Happiness.

The Strategy objectives most relevant to air quality are contained in the principle of Zero Carbon Buildings and Sustainable transport. These have been detailed below.

#### Zero Carbon Buildings

The Council aims to minimise energy consumption and encourage the use of renewable energy sources. The Council will require all new development across the Borough to be net zero carbon by 2014.

#### **Sustainable Transport**

The Council promotes its Smarter Travel initiative aimed at helping residents make more sustainable travel choices. The Council also supports sustainable travel aiming to make walking, cycling and public transport people's first choice for short trips.

### 9 Implementation of Action Plans

Progress on implementing the Air Quality Action Plan was reported in 2007 and 2009. Following the declaration of the whole borough as an AQMA in 2013, the previous Air Quality Action Plan was amended to apply to the whole borough. The measures contained in the Action Plan will be revised in 2015. Progress on implementing the measures contained in the existing Action Plan is reported in Table 9.1 below:

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1	Sustainabl e Transport Strategy	Develop a strategy for promoting and supporting sustainable transport options within the borough	LB Sutton	2013	By 31/12/2013	Strategy in place and published. Strategy being used to inform decision- making within the Council	The development of the Strategy itself will not have an impact but the implement-ation of measures contained therein can have a medium-high impact	A Sustainable Transport Strategy for LB Sutton was first produced in 1999 and a Smarter Travel Sutton project ran from 2006-2009.	It was recognised that the Sustainable Transport Strategy needed updating. A draft is currently being produced.	The Draft Sustainable Transport Strategy will be consulted on in the autumn of 2014 with the final version to be published by end of 2014.	
2	Delivery & Servicing Plans	To have a DSP in place for the Council and to promote the use of DSPs to other fleet operators	LB Sutton	Pre- 2011	Ongoing	Number of deliveries made per day by internal mail fleet; Number of fleet operators within the borough who have active DSP in place	Low	A DSP for the Council was adopted in October 2013. Advice leaflets on DSPs have been prepared to disseminate to local businesses.	The number of deliveries made per day by the internal mail fleet was reduced from 2 to 1. As part of a BID Feasibility study, LBS has been establishing contact with fleet operators in the Beddington industrial area.	Ongoing	
3	Parking Policy	To have a parking policy in place that ensures consideration of air quality impacts are an inherent part of the decision- making on parking controls.	LB Sutton	Pre- March 2013	Ongoing	Parking policy in place that includes consideration of air quality; Adoption of parking policies that encourage cleaner vehicles.	Low – Medium (where parking controls are implemented)	A Parking Policy was drafted in 2013 and received approval in March 2013.	The Parking Policy was adopted in April 2013. Parking charges were revised in June to introduce progressively higher charges for additional vehicles.	Ongoing	

### Table 9.1 Progress towards Action Plan Measures

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
4	Sutton Transport Plan	To have a Transport Plan in place	LB Sutton	Comple te but periodicall y reviewed	Ongoing	LIP in place which includes transport policies that align with air quality objectives.	The development of the Plan itself will not have an impact but the implement- ation of measures contained therein can have a medium- high impact	The Sutton Transport Plan or LIP was published in July 2011. This includes an objective for the borough of 'reducing the harmful effects of transport on health & the environment' and identifies Improving Air Quality as one of the challenges for the borough.	A number of schemes were identified and delivered through the LIP, some of which are included as separate actions. In addition, there have been a number of cycle path and pedestrian crossing improvement schemes implemented. Also, works completed at Butter Hill to tackle a bottleneck and prevent traffic backing up on to the A237.	Ongoing	
5	Workplace Travel Plans	To promote the uptake of WTPs in workplaces throughout the borough	LB Sutton	Comple te but periodicall y reviewed	Ongoing	Number of workplaces with active Travel Plan in place	Low	10 businesses in the borough have adopted WTPs	Ran sustainable travel days including Dr Bike and bike marking at 5 workplaces; Development control process is being used to ensure that new developments adopt WTPs; Sponsored the Cheam Fair with branding throughout the fair and slots on Radio Jackie to raise awareness (potential reach of 4,000 people)	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
6	Council employee Travel Plan	To have a Travel Plan in place for Council employees and encourage a reduction in travel by motor vehicles to/from and during work	LB Sutton	Comple te but periodicall y reviewed	Ongoing	Change in mode of transport used by Council employees to/from and during work	Medium	Staff Travel Survey in 2013 showed that 44% of staff travel to work by car in single occupancy journeys. This is a decrease of 8% compared to the previous survey in 2011. Review of Car User Allowances for staff completed in 12/13 which resulted in removal of Essential Car User Allowance. Introduced Cycle to Work Scheme.	Promotion of sustainable travel message; More facilities provided for staff who cycle to/during work as a result of demand and 100% uptake of cycle lockers provided; 29 staff applied for cycle to work scheme, 15 staff requested cycle training. The targets and methods of collecting data have been reviewed to be brought into line with TfL reporting. Based on these methods, 46% of staff travel to work using a sustainable mode of transport.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
7	School Travel Plans	To have an active Travel Plan in place at Council schools and encourage a reduction in travel to/from schools by motor vehicles	LB Sutton	Comple te but periodicall y reviewed	Ongoing	Percentage of schools with active Travel Plan in place	Low - Medium	Over half of the 71 schools were accredited with 25 awarded bronze, 5 silver & 11 gold.	Number of schools engaged in STP process rose by 11 to 53 during 2013-14. Of these, 20 had received bronze accreditation, 11 silver & 15 gold; "Scoot to School" training program is being offered to schools across the Borough, in response to the increase in the number of children scooting to school; Surveys show that 79% of children travel to school using sustainable transport modes.	Ongoing	While the contribution to concentra-tions from school associated transport across the borough are relatively low, the emissions around school entrances can be fairly high.
8	Car Clubs	To promote use of car clubs as an alternative to individual car ownership	LB Sutton	Ongoin g	Ongoing	Number of spaces reserved for Car Club vehicles in the borough; Number of registered users with a Car Club in the borough		Zip Car replaced Streetcar in the Borough in 2011. Membership rose to 520 with usage fluctuating between 20% and 30% (of available booking time). However, further changes in the company providing Car Club facilities affected levels of membership and use.	The new scheme Car2go was ended and Zip Car have again taken over the provision of Car Club facilities within the borough. The Council is now seeking to ensure a level of continuity in the provision so that membership and participation can build up.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
9	Wallington Integrated Package	To reduce traffic congestion in Wallington town centre through package of traffic management measures	LB Sutton	Comple te	Complete	Changes to average journey times along Woodcote Road; Changes in pollutant concentrations measured at Sutton 4 air quality monitoring station	Low (overall) Medium (local area)	The project was completed in 2011.	As project is complete, only monitoring of effectiveness of scheme is being carried out. Data indicates that traffic flow has improved. Air quality data has not been collected due to operational problems with the monitor.	Action complete and to be removed from Action Plan.	
1 0	Worcester Park and North Cheam scheme	To reduce traffic congestion and improve pedestrian accessibility	LB Sutton	Pre- 2012	2012-14		Low (overall) Medium (local area)	Work started to deliver improvements to local environment and shopping area in May 2012.	Improvements to pedestrian environment including widened paths, new benches, trees and cycle bays. In addition, there have been improvements to the shop fronts, hosting of street markets and working with businesses on loyalty schemes	Summer 2014	LB Sutton has been working with the businesses to encourage more local shopping which benefits both the environment and the local economy.
1	Heart of Hackbridge regeneration project	To smooth traffic flow and reduce dominance of motor vehicles in Hackbridge	LB Sutton	Comple te	Ongoing	Delivery of a highways scheme through the Hackbridge shopping area that reduces traffic speeds and increases pedestrian crossing opportunities	Low (overall) Medium (local area)	Highways scheme designed and public consultation carried out. Plans prepared ready for implement- ation.	Finalisation of design and approvals for implementation secured. Work with local shops on improving frontages to complement highways redesign and encourage local shopping.	September 2014	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1 2	Energy Conserva-tion	To reduce energy use in buildings owned/managed by the Council	LB Sutton	Ongoin g	Ongoing	Energy use in Council buildings and use of carbon savings as indicator	Low	The One Planet Action Pan launched in 2009 included energy conservation as a key measure to implement with ambitious carbon-reduction targets for homes and Council buildings in the borough. 10, 457 tonnes of CO <sub>2</sub> were emitted from Council buildings in 2012- 13	Energy efficiency measures implemented through Mayor of London's RE:FIT programme including replacing lighting systems with energy efficient ones in street lights & schools. Also work with residents on improving energy efficiency and Fuel Poverty Strategy adopted in March 2014. 10,616 tonnes of CO <sub>2</sub> were emitted from Council buildings in 13-14.	Ongoing	
1 3	Alternative Refuelling Sites	To promote cleaner vehicles by ensuring infrastructure for refuelling is in place	LB Sutton	Ongoin g	Ongoing	Number of publicly accessible charging points for electric vehicles in the borough	Low - Medium	There are 12 publicly accessible electric vehicle charging points in the borough that are part of the Source London network. Of these, 7 were installed by the Council.	No further charge points were installed during the year.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1 4	Cleaning Council Fleet	To reduce the emissions to air from Council's own fleet	LB Sutton	Ongoin g	Ongoing	% of council fleet that use cleaner fuel; annual fuel consumption	Medium	3 vans run on 30% biodiesel; 44 LGV and 36 non-LGV meet Euro V standards	4 vehicles returned as came to end of lease. A further 10 refuse vehicles were purchased. As a total of 17 vehicles were added to the Council fleet, there was a rise in CO <sub>2</sub> emissions from the fleet.	Ongoing	As an operator of a relatively large fleet, the Council has the potential to both make significant reductions in its overall emissions and to lead by example.
1 5	Smoke Control Areas	To ensure emissions from domestic fuel burning are controlled	LB Sutton	Ongoin g	2015	% of borough covered by a Smoke Control Order; Number of complaints investigated about unauthorised fuel use	Low	Historic Smoke Control Orders are in place covering almost 100% of the borough but with possible anomalies due to boundary changes.	Research carried out to identify the historic Smoke Control Orders and the area of the borough covered; Very few complaints (2) about unauthorised fuel use were received although the service dealt with 12 enquiries from people who wanted to ensure that they were complying with smoke control regulations suggesting that awareness of smoke control is high.	One Smoke Control Order to cover the whole borough to be in place by end 2015; Investigation of complaints ongoing.	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1 6	Air Quality Manage-ment Areas	To ensure that the designated Air Quality Management Areas are appropriate and relevant	LB Sutton	Comple te	Ongoing but reviewed periodically	Area of borough covered by an AQMA; Areas where Air Quality Objectives are exceeded.	n/a	Air Quality Management Orders were issued in 2000, 2004 and 2010 to cover areas of the borough where exceedences were identified.	New Air Quality Management Order came into force on 1 <sup>st</sup> June 2013 making the whole borough an AQMA. The AQMA is based on predicted exceedences of the annual average objective for nitrogen dioxide. The hourly objective for NO2 is also exceeded at some locations and the Order also includes objectives for PM10. (See main body of report).	Complete but subject to periodic reviews	
1 7 & 18	Industrial Processes	To ensure that all processes that require an Environ- mental Permit are permitted and comply with their conditions	LB Sutton	Comple te but regularly reviewed	Ongoing	Number of processes which have an Environmental Permit; Number of enforcement actions taken	Low	All processes that have an environmental permit have been inspected and risk assessed according to the regulatory requirements.	51 installations had a permit in place at end March 2013. This had reduced to 48 by end March 2014. No enforcement action was required.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
1 9 & 20	Bonfires & Waste Disposal	To reduce the number of bonfires and ensure waste is disposed of appropriately	LB Sutton	Comple te	Ongoing	Number of complaints received about bonfires; Borough rates for recycling and green waste collection	Low	Information on waste disposal and regulations relating to bonfires are on the Council's webpage. The Council operates a fortnightly green waste collection between April and December.	163 complaints about bonfires were received and investigated during the year. The Council managed to retain its green waste collection despite financial pressures. The borough's recycling rate remained at 37%. Residents were encouraged to compost through provision of subsidised home composting bins	Ongoing	The effects from a bonfire tend to be localised and temporary so does not affect overall concentrations. However, the number of complaints received shows both the level of annoyance with bonfires but also that residents are utilising the Council's Report It facility.

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
2 1& 22	Demolition and Construction	To minimise the dust emissions generated during demolition and construction	LB Sutton	Ongoin g	Ongoing	Number of developments that have a Construction Management Plan in place committing to comply with Code of Good Practice; Number of complaints received about dust from construction / demolition activities	Low (Medium close to sites depending on scale of development)	The Council published its Site Development Policies DPD in March 2012 which contains policies on air quality. This requires applications for developments that will have a significant adverse impact on air quality to submit an Air Quality Assessment that includes consideration of controlling dust during demolition/ construction phase.	Developers have been directed to guidance produced by the GLA and by the Institute of Air Quality Management for assessing the impacts from demolition/ construction and for determining best practices for mitigating the impacts. Where appropriate, Construction Management Plans have needed to be submitted and approved prior to development taking place.	Ongoing	
2 3	Engine Idling	To discourage unnecessary idling of engines	LB Sutton	Ongoin g	Ongoing	Number of locations where complaints received about engine idling	Low	The borough has helped support TfL's campaign to discourage engine idling.	Engine idling at schools targeted through educational work in schools with students. No Fixed Penalty Notices for engine idling were served.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
2 4	Regulating Waste Sites	To work with the Environment Agency on regulating waste sites to minimise fugitive emissions from sites	LB Sutton/ Environme nt Agency		Ongoing	Number of waste sites included in the list of Priority Sites; Number of joint regulatory visits made by Council and EA staff.	Low	A joint approach to tackling waste sites in the borough had been discussed and joint site visits being carried out.	A joint Enforcement Strategy was drawn up together with a list of priority sites. An Area Action Plan was developed by the Environment Agency for tackling the number of waste sites in the Beddington Industrial area. Several joint visits were carried out to the waste sites in Beddington to monitor compliance and a presentation on the joint enforcement strategy was given to a residents' group.	Ongoing	
No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
--------	-------------------------	---	-------------------	-------------------	---------------------------	--	---	--	--	---------------------------------	---
2 5	Developme nt Control	To minimise impacts on air quality and existing residents from new developments	LB Sutton	Ongoin g	Ongoing	Number of developments where an Air Quality Assessment has been submitted as part of the planning process.	Low-Medium	In March 2012, the Site Development Policies DPD was adopted which includes policy DM10 on air quality. This requires developments having potentially significant impacts on air quality to submit an Air Quality Assessment and to include measures to mitigate any adverse impacts on air quality identified.	Since the whole borough was declared an Air Quality Management Area in June 2013, Air Quality Assessments can be required for a greater number of developments. This allows the air quality impacts to be considered and mitigated during the design phase. Several applications for developments with the potential to impact on air quality were submitted and decided during the year and the major ones have been considered in Chapter 5 of this Report.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
2 6	Transport Impact Assessments	To minimise emissions from vehicular movements associated with new developments	LB Sutton	Ongoin g	Ongoing	Number of developments where the submission of a travel plan has been a requirement.	Low-Medium	A PTAL map for the borough shows that there are areas where accessibility to public transport is relatively poor. DM20 of the Site Development Policies DPD requires the Transport Impact of new developments to be assessed. Those that have a potentially significant number of vehicle movements associated with them are required to submit a Travel Plan.	Several developments have been required to submit a Travel Plan but the numbers have not been recorded.	Ongoing	
27	Planning agreements	To ensure that air quality impacts from new developments are mitigated	LB Sutton	Ongoin g	Ongoing	Number of developments where a planning agreement was secured to mitigate against its predicted air quality impacts	Low	LB Sutton has a SPD in place on Planning Obligations which covers air quality.	In 2013/14, £35,500 was secured as a contribution towards monitoring the air quality impacts from a specific development.	Ongoing	

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
28	Low NOx boilers	To promote the use of low NOx boilers where appropriate in new developments	LB Sutton		Ongoing	Number of new developments where installation of low NOx boilers have been approved.	Low		The use of low NOx boilers is being suggested to developers where appropriate as a means of reducing NOx emissions. However, no recording of numbers has taken place.	Ongoing	
2 9	Continuous Air Quality Monitoring	To maintain a network of continuous air quality monitors to provide meaningful air quality data	LB Sutton	Comple te but regularly reviewed	Ongoing	Number of locations in the borough where air quality is monitored; Measured concentrations and compliance with air quality objectives	None	At end of Mar 2013, there were 4 automatic monitoring stations located within the borough	At end of Mar 2014, there were 4 automatic monitoring stations located within the borough	Ongoing	This measure aims to monitor emission reductions within the borough although publication of data helps to raise awareness.
3 0	Indicative air quality monitoring	To maintain a network of indicative air quality monitors to gather air quality data across the borough	LB Sutton	Comple te but regularly reviewed	Ongoing	Number of locations in the borough where air quality is monitored; Measured concentrations and compliance with air quality objectives	None	At end of Mar 2013, there were diffusion tubes in 7 different locations measuring monthly averages of nitrogen dioxide.	At end of Mar 2014, there were diffusion tubes in 20 different locations measuring monthly averages of nitrogen dioxide. 12 of these locations were schools as part of a project to engage schools and teach children about air quality.	Ongoing	This measure aims to monitor emission reductions within the borough although publication of data helps to raise awareness.

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
3 1	AirText	To promote the uptake of airText service to enable people to better manage their exposure to poor air quality	LB Sutton	Comple te but regularly reviewed	Ongoing	Number of registered users of airText Service within the borough	Low	There were 136 individual registered users of airTEXT	No additional users were registered during the year. Details about airTEXT and the link for registering are on the Council webpage.	Ongoing	
3 2	Public Health partnership	To work in partnership with Public Health on projects that can improve air quality	LB Sutton	Ongoin g	2014 onwards	Number of joint projects delivered	Low		Public Health team in place and discussions on air quality projects have taken place. Chapter on air quality drafted for inclusion in the Joint Strategic Needs Assessment.	Ongoing	
3 3	Beddington Lane Industrial Area	To implement specific measures in the area to tackle emissions from industry and fleet	LB Sutton	2013	Apr 2014 – Mar 2016	Number of industrial premises engaged in Council projects to reduce emissions to air;	Low – Medium	Partnership working with Environment Agency established	Funding secured from Mayor's Air Quality Fund to implement project working with fleet operators and businesses; Joint working with EA and Planning continued to improve compliance by operators.	Mar 2016	The emission reductions are likely to be low overall but will be more significant in the project area

No.	Measure	Focus	Lead Authority	Planning Phase	Implemen- tation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
3 4	Beddington Renewal and Regeneration Programme	To complement action 33 with improvements to enhance the environment for pedestrians and other road users	LB Sutton	Current	2014-2018	Development of an Environmental Strategy; Length of cycle paths installed or upgraded; Changes to pedestrian environment;	Low		Action Plan developed including short, medium and long-term measures identifying where green landscaping, cycle path and pedestrian walkways can be improved. Work has begun with landowners along the main route to acquire land and/or secure landscaping improvements along the frontages. A BID feasibility study was carried out to assess levels of support among the business community.	Mar 2018	The emission reductions are likely to be low overall but will be more significant in the project area

## **10** Conclusions and Proposed Actions

#### **10.1** Conclusions from New Monitoring Data

Monitoring results from continuous sites indicate that the annual mean objective and the 1hour objective for  $NO_2$  were met over the whole monitoring period at the background monitoring site ST3 Sutton – Carshalton and the industrial site ST8 Sutton – Beddington Lane (since it started operation in 2012).

The annual mean  $NO_2$  objective was exceeded at both kerbside locations: ST4 Sutton – Wallington and ST6 Sutton – Worcester Park over the whole monitoring period. The site ST4 Sutton –Wallington has also exceeded the 1-hour mean objective across the monitoring period. The annual mean concentrations at these two kerbside sites peaked in 2009-2010 and have been decreasing in the following years.

The review of the diffusion tube monitoring data for 2013 has identified three locations where the annual mean  $NO_2$  objective was exceeded. One of these sites (ST40) showed consistent exceedences of the annual mean objective in previous years. Two other sites (H1 and H3) were new sites added in 2013. As only three months of monitoring data were available in 2013, it is recommended that monitoring continues at those locations to confirm existing concentrations. A comparison with previous results shows that diffusion tube monitoring sites generally showed a decreasing trend since 2010. Concentrations in 2013 were lower than those observed in 2012, this trend should however be treated with caution due to low data capture in 2013.

With regards to PM<sub>10</sub>, the 2009-2013 results show that the annual mean and the 24-hour mean objectives were met at all monitoring sites during that period. Both kerbside sites ST4 and ST6 have displayed similar concentration trends since 2011 when they both increased, following which there was a decrease in concentrations during 2012. In 2013 concentrations decreased at ST4 and increased at ST6. The industrial site ST8 showed a decrease in concentrations when compared to 2012 results.

## **10.2** Conclusions relating to New Local Developments

Several major planning applications have been identified as having the potential to impact air quality. A number of these are concentrated in the Beddington North ward and are for sites that handle waste. Planning controls have sought to ensure that dust and particulates are controlled and monitoring of particulate concentrations in the ambient air will continue to verify the adequacy of the controls. Regarding planning application ref. B2013/68306 for a mixed-use development including CHP plant at Old Gas Works, High Street, Sutton, it is recommended that monitoring continues at relevant locations within Sutton to confirm the impact of that development on local air quality as existing annual mean NO<sub>2</sub> concentrations around Sutton have been shown to be close to or exceeding the objective in recent years.

### **10.3 Proposed Actions**

- Continue diffusion tube and continous monitoring in the district to identify future changes in pollutant concentrations;
- Continue monitoring in Sutton to identify the impact of new development;
- Continue and extend the monitoring in Beddington North to identify the impacts of new development;
- If PM<sub>10</sub> continues to comply with the air quality objectives once new developments are operational, consider revocation of Sutton AQMA for PM<sub>10</sub>; and
- Proceed to the 2015 Updating and Screening Assessment.

## 11 References

- AEA (2008) *Diffusion Tubes for Ambient NO2 Monitoring: Practical Guidance for Laboratories and Users.* Report to Defra and the Devolved Administrations.
- Department for Environment, Food and Rural Affairs (Defra) (2009) Local Air Quality Management Technical Guidance LAQM.TG(09).
- Department for Environment, Food and Rural Affairs (Defra) (2009) Local Air Quality Management Policy Guidance LAQM.PG(09).
- Environmental Protection UK (2010) *Development Control: Planning for Air Quality* (2010 Update).
- Highways Agency (2007) Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 1 Air Quality, HA207/07.
- London Borough of Sutton (2012) Local Development Framework. Site Development Policies DPD.
- London Borough of Sutton (2011) Local Implementation Plan 2011 2031. Sutton Transport Plan.
- London Borough of Sutton (2009) Local Development Framework. Core Planning Strategy.
- London Borough of Sutton (2009) One Planet Action Plan.
- London Borough of Sutton (2009) Local Air Quality Management Updating And Screening Assessment 2009.
- London Borough of Sutton (2008) Local Air Quality Management Annual Progress Report.

## **Appendices**

### Appendix A - QA:QC Data

#### **Diffusion Tube Bias Adjustment Factors**

Until February 2013 diffusion tubes were supplied by Bureau Veritas and analysed by Gradko International Limited using a preparation method of 50% triethanolamine (TEA) in acetone. From August 2013 diffusion tubes have been supplied and analysed by Gradko International Limited using a preparation method of 20% triethanolamine (TEA) in water.

The diffusion tube results from January till February 2013 have been corrected using the bias correction factor of 1.00 (based on 17 studies, version 03\_14) as obtained from the national bias adjustment calculator for the preparation method of 50% triethanolamine (TEA) in acetone. The results from August till October 2013 have been corrected using the bias correction factor of 0.95 (based on 24 studies, version 03\_14) as obtained from the national bias adjustment calculator for the preparation method of 20% triethanolamine (TEA) in water.

The bias adjustment factors for the years 2009-2012 were also obtained from the national bias adjustment calculator, version 03\_14, for the preparation method of 50% triethanolamine (TEA) in acetone; these were: 0.97 (2009), 1.03 (2010), 0.95 (2011) and 1.02 (2012).

For previous data, years 2007 to 2008, the bias adjustment factors have been taken from the Council's previous LAQM annual reports. The factors used were 0.98 (2007) and 0.93 (2008).

#### **Discussion of Choice of Factor to Use**

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

As no co-location studies have been carried out by Sutton Council during 2009-2013 the national bias adjustment factor was used to adjust the diffusion tube data.

The national bias adjustment factor was also used in the previous years.

#### **PM Monitoring Adjustment**

The  $PM_{10}$  results from TEOM monitors have been corrected using the Volatile Correction Model (VCM) by the Environmental Research Group (ERG) of Kings College, London, who undertake the data management of the continuous monitoring locations.

#### Short-term to Long-term Data adjustment

#### Particulate Matter PM<sub>10</sub>

Annualisation (short to long term data adjustment) was applied to data capture below 75%; details are provided in the tables below.

#### ST4 Sutton – Wallington, 2013

Continuous Monitoring Site	Reading New Town Annualisation Factor	Thurrock Annualisation Factor	Average Annualisation Factor
ST4 Sutton – Wallington	0.95	0.97	0.96

#### ST6 Sutton – Worcester Park, 2013

Continuous Monitoring Site	Reading New Town Annualisation Factor	Thurrock Annualisation Factor	Average Annualisation Factor
ST6 Sutton – Worcester Park	0.94	0.95	0.95

#### ST8 Sutton – Beddington Lane, 2012

Continuous Monitoring Site	London N. Kensington Annualisation Factor	Wandsworth – Putney Annualisation Factor	Ealing - Southall FDMS Annualisation Factor	Mole Valley – Dorking Annualisation Factor	Average Annualisation Factor
ST8 Sutton – Beddington Lane	1.25	1.12	1.18	1.11	1.17

#### ST5 Sutton – Beddington Lane (north), 2012

Continuous Monitoring Site	London N. Kensington Annualisation Factor	Wandsworth – Putney Annualisation Factor	Ealing - Southall FDMS Annualisation Factor	Mole Valley – Dorking Annualisation Factor	Average Annualisation Factor
ST5 Sutton – Beddington Lane (north)	0.65	0.79	0.71	0.72	0.72

#### ST7 Sutton – Therapia Lane, 2012

Continuous Monitoring Site	London N. Kensington Annualisation Factor	Wandsworth – Putney Annualisation Factor	Ealing - Southall FDMS Annualisation Factor	Mole Valley – Dorking Annualisation Factor	Average Annualisation Factor
ST7 Sutton – Therapia Lane	0.82	0.92	1.08	0.79	0.91

#### ST4 Sutton – Wallington, 2011

Continuous Monitoring Site	Reading New Town Annualisation Factor	London N. Kensington Annualisation Factor	Kensington and Chelsea - North Ken Annualisation Factor	Sevenoaks - Greatness Park Annualisation Factor	Average Annualisation Factor
ST4 Sutton – Wallington	1.11	1.13	1.13	1.20	1.14

#### ST6 Sutton – Worcester Park, 2010

Continuous Monitoring Site	Reading New Town Annualisation Factor	Thurrock Annualisation Factor	Mole Valley – Dorking Annualisation Factor	Average Annualisation Factor
ST6 Sutton– Worcester Park	0.85	0.98	0.95	0.93

#### ST6 Sutton – Worcester Park, 2009

Continuous Monitoring Site	Reading New Town Annualisation Factor	Thurrock Annualisation Factor	Mole Valley – Dorking Annualisation Factor	Average Annualisation Factor
ST6 Sutton– Worcester Park	0.91	0.97	0.92	0.93

#### ST6 Sutton – Worcester Park, 2008

Continuous Monitoring Site	London N. Kensington Annualisation Factor	Thurrock Annualisation Factor	Mole Valley – Dorking Annualisation Factor	Average Annualisation Factor
ST6 Sutton– Worcester Park	1.01	1.02	0.98	1.00

#### Nitrogen dioxide

Annualisation (short to long term data adjustment) was applied to data capture below 75%; details are provided in the tables below.

OTO OULION		2013				
Continuous Monitoring Site	London Hillingdon Annualisation Factor	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST3 Sutton- Carshalton	0.96	0.96	0.95	0.95	0.99	0.96

ST3 Sutton – Carshalton, 2013

#### ST4 Sutton – Wallington, 2013

Continuous Monitoring Site	London Hillingdon Annualisatio n Factor	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST4 Sutton– Wallington	1.09	1.00	1.01	0.88	0.96	0.99

#### ST8 Sutton – Beddington Lane, 2012

Continuous Monitoring Site	London Hillingdon Annualisatio n Factor	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST8 Sutton – Beddington Lane	1.02	1.07	1.13	1.07	1.09	1.08

#### ST8 Sutton – Beddington Lane, 2012

Continuous Monitoring Site	London Hillingdon Annualisatio n Factor	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST8 Sutton – Beddington Lane	1.02	1.07	1.13	1.07	1.09	1.08

#### ST5 Sutton – Beddington Lane (north), 2012

Continuous Monitoring Site	London Hillingdon Annualisatio n Factor	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST5 Sutton – Beddington Lane (north)	0.96	0.76	0.73	1.02	0.81	0.86

ST7 Sutton – Therapia Lane, 2012

• • • • • • • • • • • • • • • • • • • •		,				
Continuous	London	London N.	London	London	London	Avorago
Monitoring	Hillingdon	Kensington	Eltham	Teddington	Westminster	Average
Sito	Annualisatio	Annualisation	Annualisation	Annualisation	Annualisation	Factor
Sile	n Factor	Factor	Factor	Factor	Factor	Facior
ST7 Sutton –						
Therapia	0.99	0.78	0.79	1.08	0.83	0.89
Lane						

ST4 Sutton - Wallington, 2011

Continuous	London	London N.	London	London	London	Average
Monitoring	Hillingdon	Kensington	Eltham	Teddington	Westminster	Average
Sito	Annualisatio	Annualisation	Annualisation	Annualisation	Annualisation	Factor
Sile	n Factor	Factor	Factor	Factor	Factor	T actor
ST4 Sutton-	0.08	1 01	1.00	1.05	1.06	1.02
Wallington	0.90	1.01	1.00	1.05	1.00	1.02

ST6 Sutton - Worcester Park, 2008

Continuous Monitoring Site	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST6 Sutton– Worcester Park	0.84	0.83	0.72	0.76	0.79

All diffusion tube monitoring sites in 2013 had data capture below 75%. Annualisation was undertaken for all sites with data capture of 3 months and above; details are provided in the table below. Sites with lower data capture were not annualised as the monitoring period was too short to be representative of annual exposure.

2013						
Diffusion Tube Site	London Hillingdon Annualisation Factor	London N. Kensington Annualisation Factor	London Eltham Annualisation Factor	London Teddington Annualisation Factor	London Westminster Annualisation Factor	Average Annualisation Factor
ST01	0.984	1.068	1.110	1.299	1.099	1.112
ST03	0.984	1.068	1.110	1.299	1.099	1.112
ST04	0.984	1.068	1.110	1.299	1.099	1.112
ST05	0.984	1.068	1.110	1.299	1.099	1.112
ST06	0.984	1.068	1.110	1.299	1.099	1.112
ST07	0.984	1.068	1.110	1.299	1.099	1.112
ST 32	0.972	0.955	0.926	0.785	0.981	0.924
ST 33	0.972	0.955	0.926	0.785	0.981	0.924
ST 36	0.972	0.955	0.926	0.785	0.981	0.924
ST 37	0.995	0.938	0.878	0.663	0.960	0.887
ST 40	0.972	0.955	0.926	0.785	0.981	0.924
ST 41	0.972	0.955	0.926	0.785	0.981	0.924
H1	0.984	1.068	1.110	1.299	1.099	1.112
H3	0.984	1.068	1.110	1.299	1.099	1.112

#### Benzene

Annualisation was required for one site only – site ST5 - where data capture was below 75% in 2011; details are provided in table below.

Site ST5

BTEX Monitoring Site	ST03 BTEX Monitoring Site Annualisation Factor
ST05	0.990

#### **QA/QC of Diffusion Tube Monitoring**

Gradko International Ltd is a UKAS accredited laboratory and participates in the Workplace Analysis Scheme for Proficiency (WASP) for NO<sub>2</sub> diffusion tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO<sub>2</sub> concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. In the latest available WASP results, rounds 120 through to 123 (January to December 2013) Gradko International have scored 100%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of  $< \pm 2$ . Based on 24 studies (20% TEA in water preparation method), 96% of all local Authority co-location studies in 2013 were rated as 'good' (tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

## Appendix B – Monitoring Data

2013

Site ID	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	% Data Capture	AVERAGE
ST01								21.7	25.4	18.9			3	25.0	22.0
ST02								37.2					1	8.3	37.2
ST03								15.0	28.2	17.4			3	25.0	20.2
ST04								17.2	25.7	19.5			3	25.0	20.8
ST05								26.5	31.3	23.4			3	25.0	27.1
ST06								23.1	24.3	17.3			3	25.0	21.6
ST07								16.8	28.0	21.6			3	25.0	22.1
ST08								13.6	30.3				2	16.7	21.9
ST 32	37.1	32.3						20.0	28.4	23.0			5	41.7	28.2
ST 33	45.4	40.4						49.4	46.1	39.6			5	41.7	44.2
ST 36	38.5	47.5						31.6	39.7	32.2			5	41.7	37.9
ST 37	34.1	31.9						24.8					3	25.0	30.3
ST 38	27.2	22.8											2	16.7	25.0
ST 40	54.7	49.4						48.8	59.9	46.8			5	41.7	51.9
ST 41	26.4	25.7						14.3	24.0	18.6			5	41.7	21.8
H1								48.1	36.5	34.9			3	25.0	39.8
H2									39.6	43.7			2	16.7	41.6
H3								40.6	46.4	32.6			3	25.0	39.9

#### 

Site ID	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	% Data Capture	AVERAGE
ST 32		26.6	39.8	31.9	30.0	27.8	30.9	29.2	24.9	32.8	39.0	27.2	11	91.7	30.9
ST 33	41.3	38.7	46.9	35.0	34.4	31.7	34.1	31.0	35.0	36.5	20.5	39.1	12	100.0	35.3
ST 36	36.6	32.5	44.7	33.1		21.2	25.4	23.0	28.7	33.0	35.5	36.4	11	91.7	31.8
ST 37	35.8	31.2	38.5	26.6	23.3	18.8	19.5	17.9	21.7	27.5	46.5	29.1	12	100.0	28.0
ST 38	26.6	23.8	26.4	18.8	12.8	10.0	10.8	9.5	14.0	18.0	30.1	21.4	12	100.0	18.5
ST 40	60.8	49.7	62.4	52.2	44.9	41.7	41.8	41.8	41.0	50.5	55.9	45.7	12	100.0	49.0
ST 41	27.5	25.0	33.8	18.2	14.3	10.6	12.4	11.1	16.2	22.7	23.1	17.7	12	100.0	19.4

#### 

Site ID	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	% Data Capture	AVERAGE
ST 32	34.5	32.8	44.0	33.8	31.2	30.5	27.5	26.3	31.1	35.3	41.1	21.2	12	100.0	32.4
ST 33	44.1	40.7	44.8	40.6	35.2	37.8	35.3	35.2	31.8	41.7	46.7	28.8	12	100.0	38.5
ST 36	39.1	36.8	43.0	40.7	25.2	25.4	32.0	24.4	22.0	30.7	40.6	26.1	12	100.0	32.2
ST 37	34.6	25.6	42.5	30.9	21.1	21.0	22.0	21.0	19.4	24.0	30.6	23.4	12	100.0	26.3
ST 38	26.3	20.7	23.0	16.9	11.4	12.7	14.2	12.6	11.1	15.0	22.0	18.3	12	100.0	17.0
ST 40	53.8	53.0	60.8	50.6	47.2	47.7	47.6	43.1	46.8	48.6	57.9	41.6	12	100.0	49.9
ST 41	28.0	19.3	24.9	22.1	11.4	13.7	15.7	14.3	14.1	16.5	11.8	21.2	12	100.0	17.7

2	n	1	n
-	υ		υ

Site ID	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	% Data Capture	AVERAGE
ST 32	35.6	40.0	31.7	34.0	30.3	30.2	28.0	27.9	31.9	30.5	40.5	40.4	12	100.0	33.4
ST 33	47.6	53.0	43.0	40.1	39.7	42.3	34.1	37.1	47.1	43.7	49.0	50.6	12	100.0	43.9
ST 36	46.1	41.1	30.0	32.0	33.0	30.8	24.7	27.3	28.7	40.6	44.7	51.0	12	100.0	35.8
ST 37	37.3	34.9	28.3	24.0	25.4	25.0	19.0	23.7	24.2	27.0		69.0	11	91.7	30.7
ST 38	24.6	28.2	15.9	14.1	15.1	12.3	11.7	13.7	18.6	19.2	27.6	32.2	12	100.0	19.4
ST 40	55.1	56.1	43.9	45.5	52.9	47.4	45.3	45.0	56.2	53.7	57.5	55.0	12	100.0	51.1
ST 41	29.0	25.8	19.6	16.5	15.5	13.1	12.3	12.0	18.8	20.7	28.7	32.9	12	100.0	20.4

<b>^</b>	n	^	ົ
_			ч
~	v	v	-

Site ID	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	% Data Capture	AVERAGE
ST 32	32.3	42.5	34.3	45.9	37.2	33.0	28.5	30.1	31.7	35.6	31.6	42.7	12	100.0	35.5
ST 33	50.7	49.2	42.6	51.4	37.2	43.7	32.6	36.5	45.0	53.5	41.8	50.3	12	100.0	44.5
ST 36	37.3	48.5	31.0	42.0	27.9	29.0	22.3	6.5	33.2	38.7	28.7	43.4	12	100.0	32.4
ST 37	38.8	47.4	28.5	33.2	22.7	26.7	16.5	19.7	28.2	32.9	29.9	36.6	12	100.0	30.1
ST 38	26.6	5.5	17.0	20.9	11.7	13.9	10.6	12.7	19.4	21.0	17.8	27.1	12	100.0	17.0
ST 40	65.3	57.9	49.4	61.1	50.5	52.0	42.4	42.2	49.1	55.9	52.4	57.7	12	100.0	53.0
ST 41	25.2	31.5	22.4	23.7	14.0	15.1	11.7	13.3	19.4	20.9	18.9	30.0	12	100.0	20.5

## **Appendix B: USA Additional Information**

#### **Updating and Screening Assessment – Additional Information**

Sutton Council did not complete an Updating and Screening Assessment report in 2012. Information which would have been included in this report, which does form part of the Annual Progress Report is presented in the below Annex. The monitoring data from 2011 has been presented in the main body of the report.

## **Road Traffic Sources**

#### Narrow Congested Streets with Residential Properties Close to the Kerb

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

- Daily traffic flow (AADT) of around 5,000 vehicles per day;
- Congested street is one that has slow moving traffic that is frequently stopping and starting throughout the day; and/or
- A narrow street is one with residential properties within 2 m of the kerb and buildings on both sides of the road

London Borough of Sutton confirms that there have been no newly identified narrow streets with a vehicle flow of greater than 5,000 vehicles per day.

London Borough of Sutton 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.

#### Busy Streets Where People May Spend 1-hour or More Close to Traffic

There will be some street locations where individuals may regularly spend 1-hour or more close to busy traffic. For example, streets with many shops and streets with outdoor cafes and bars. The assessment considers areas not assessed adequately in previous rounds of review and assessment for the nitrogen dioxide objectives.

London Borough of Sutton will assess the High Street in Sutton in the next round of the Review and Assessment provided that the proposed Sainsbury's development is completed in Sutton.

London Borough of Sutton confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

#### Roads with a High Flow of Buses and/or HGVs.

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

London Borough of Sutton confirms that there are no new/newly identified roads with high flows of buses/HDVs.

#### Junctions

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

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

London Borough of Sutton has not identified any new junctions that have not been adequately considered in previous rounds.

London Borough of Sutton confirms that there are no new/newly identified busy junctions/busy roads.

# New Roads Constructed or Proposed Since the Last Round of Review and Assessment

London Borough of Sutton confirms there are no new/proposed roads.

#### Roads with Significantly Changed Traffic Flows

Roads with significantly changed traffic flow (since the last round of review and assessment) should take into account the following:

- Daily traffic flow is 10,000 vehicles per day or more; and
- The increase in traffic flow is 25% or more

London Borough of Sutton confirms that there are no new/newly identified roads with significantly changed traffic flows.

#### **Bus and Coach Stations**

The assessment considers both nitrogen dioxide and  $PM_{10}$  emissions at bus stations that are not enclosed with >2500 movements per day.

London Borough of Sutton confirms that there are no relevant bus stations in the Local Authority Area.

## **Other Transport Sources**

#### Airports

London Borough of Sutton confirms that there are no airports in the Local Authority area.

#### **Railways (Diesel and Steam Trains)**

The assessment for stationary trains considers sulphur dioxide emissions, while the assessment for moving diesel trains considers nitrogen dioxide emissions.

#### **Stationary Trains**

London Borough of Sutton 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.

#### Moving Trains

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

London Borough of Sutton confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

#### **Ports (Shipping)**

The assessment for shipping considers SO<sub>2</sub> emissions at busy ports with between 5,000 and

15,000 movements per year and relevant exposure within 250 meters.

London Borough of Sutton confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

## **Industrial Sources**

#### **Industrial Installations**

The assessment of industrial installations considers all of the regulated pollutants, although those most at risk of requiring further work are sulphur dioxide, NO<sub>2</sub>, PM<sub>10</sub> and benzene.

Emission sources relevant to this section have been discussed in more detail in the main part of this report (Section 5.3).

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

London Borough of Sutton has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

London Borough of Sutton confirms that there are no industrial installations with substantially increased emissions relevant to the AQS or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

# New or Significantly Changed Installations with No Previous Air Quality Assessment

London Borough of Sutton 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.

## Major Fuel (Petrol) Storage Depots

This assessment considers Benzene with respect to the 2010 objective.

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

#### **Petrol Stations**

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

- Annual throughput of more than 2,000m<sup>3</sup> of petrol per annum
- A busy road nearby, with more than 30,000 vehicles per day

London Borough of Sutton confirms that there are no petrol stations meeting the specified criteria.

#### **Poultry Farms**

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

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

London Borough of Sutton confirms that there are no poultry farms meeting the specified criteria.

### **Commercial and Domestic Sources**

#### **Biomass Combustion – Individual Installations**

The assessment considers both PM<sub>10</sub> and NO<sub>2</sub> objectives.

London Borough of Sutton confirms that there are no biomass combustion plant in the Local Authority area which meet the required criteria

#### **Biomass Combustion – Combined Impacts**

London Borough of Sutton confirms that there are no biomass combustion plant in the Local Authority area which meet the required criteria

#### Domestic Solid-Fuel Burning

The assessment considers sulphur dioxide emissions (only) from significant areas of residential properties that use solid fuel to heat their houses. 'Significant' areas are those of about 500m x 500m with more than 50 houses burning coal/smokeless fuel as their primary source of heating.

London Borough of Sutton has previously assessed areas of significant domestic solid fuel use, and concluded that it will not be necessary to proceed to a Detailed Assessment.

## **Fugitive or Uncontrolled Sources**

The assessment of fugitive and uncontrolled sources considers the  $PM_{10}$  objectives. This included consideration to quarries, landfill sites, opencast coal mining, waste transfer sites, and materials handling (i.e. ports, major construction sites). Only locations not covered by previous rounds of review and assessment, or where there is new relevant exposure, require consideration. In the case of proposed new sources, these are only required to be considered if planning approval has been granted.

Developments relevant to this section have been discussed in more detail in the main part of this report (Section 7).

London Borough of Sutton confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.